

OS/2

M A G A Z I N E

Reviewed:

Super Project 3.0

UltraCompressor II

On-line Services

Databases & OS/2

Keeping Them Safe

Do-It-Yourself Hypertext

How to build .inf files

config.sys

The Mysteries Revealed

Speeding up NetWare

Fine-tuning your OS/2 clients

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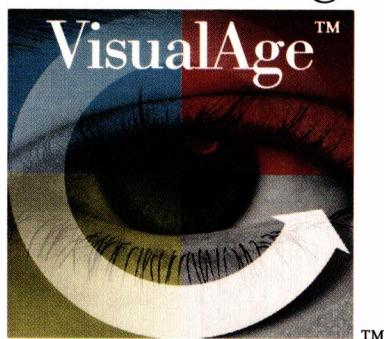
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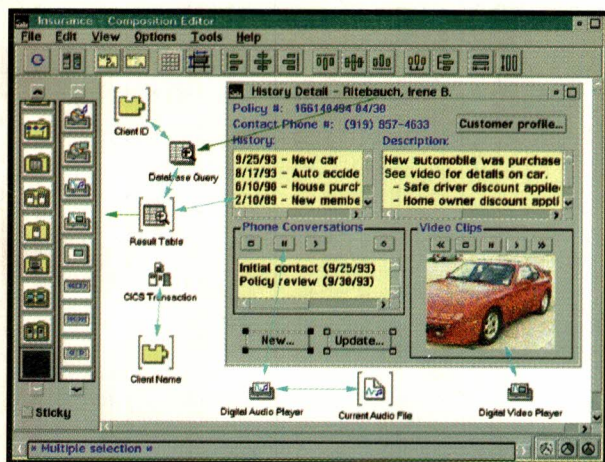
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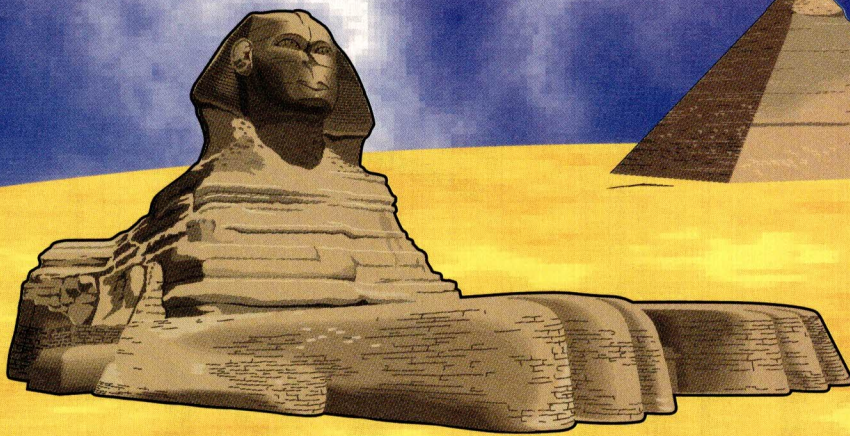
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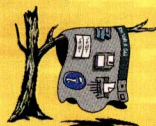
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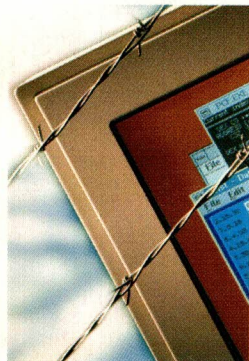
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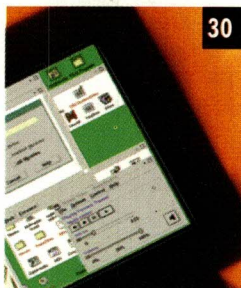
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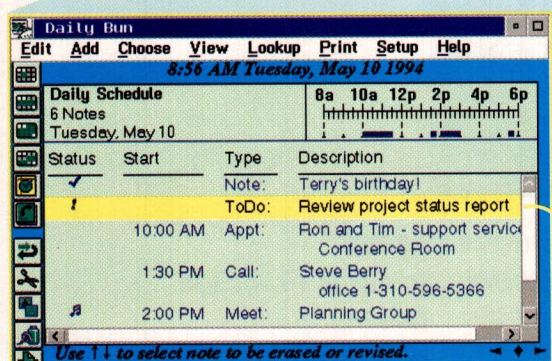
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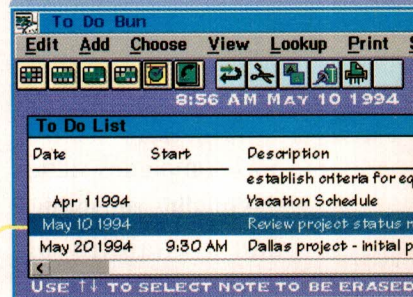
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Perspectives

Who Needs OS/2, Anyway?

Preemptive multitasking. Multithreaded applications. Compatibility with other desktop operating systems. High-performance file system. Hooks upward to AS/400, RS/6000, and mainframe distributed applications. Who needs this stuff, anyway?

I've heard it argued in the trade press, on CompuServe, at conferences, on the phone; from OS/2 users, OS/2 vendors, and even some IBM employees: Everyone needs OS/2. Down with DOS, down with Windows, down with Macintosh: The only viable desktop operating system for every PC user is OS/2 2.x.

Let's get real. Not every desktop needs OS/2—no more than every minivan owner needs the cargo capacity of an 18-wheeler, or every Sunday photographer needs the precision of a Hasselblad medium-format SLR. (This reminds me of a radio advertisement that I first heard this weekend for Apple's Macintosh Quadra: They "interview" a store owner who needs to keep track of "hundreds of customers." That man doesn't need a Quadra—and he probably doesn't need OS/2 either.)

OS/2 2.x is an industrial-strength operating system, ideal for large applications running in businesses and other organizations. I won't deny that it's great for the enthusiast wanting to run multimedia games, or for the power user who's fed up with the limitations of a graphical user interface slapped on top of a 16-bit user interface. But what concerns me is that many OS/2 supporters believe that for OS/2 to survive, it has to become the only operating system in town.

That's simply not true. OS/2 can survive and grow as an industrial-strength desktop operating system, just as professional medium-format photography continues to thrive in a world seemingly overflowing with Kodak's throw-away 35mm panoramic cameras.

So, who needs OS/2? I'll give you some examples:

- Software developers, who need a stable and robust platform for creating and debugging complex applications. As long as high-powered development tools run better under OS/2, programmers will continue choosing OS/2 as both a development platform and as a preferred development target.
- Network administrators, who want to use OS/2 not only for their file and application servers, but also as their desktop workstation-

of-choice for administering their networks. The same goes for database administrators and others within MIS/DP. As long as there are resource-creation and management tools for OS/2, you'll find OS/2 on the MIS/DP desktop.

- Other professionals, who are running heavy-duty applications, such as computer-aided design, who need the scope and scalability of an advanced 32-bit platform. As long as mission-critical applications are available under OS/2, OS/2 will flourish.

What could go wrong? OS/2 could be repositioned by IBM as a generic desktop operating system—a tool for the small office or the home user. That's not what OS/2 is (and that's not what OS/2 Magazine provides information about).

Even worse, IBM could allocate precious resources toward scaling down OS/2's power, rather than adding new capabilities. IBM could concentrate on the needs of the average desktop PC user, rather than on those features that would make OS/2 even more valuable to developers, to network administrators, and to the true high-end computer user.

IBM: Don't try to create a disposable Hasselblad for weekend snapshooters. For example, don't worry about creating and marketing an "OS/2 Lite" that would run in 4MB RAM. That's not what high-end professional computer users need.

Instead, keep adding new capabilities that professional computer users need. Release the final SMP version soon. Enhance system security. Add more built-in networking features. Work on improving Win32 application compatibility. Give us database hooks. Give us more drivers to high-capacity storage devices, large displays, tape-back-up systems. Give us *power*. Give us *productivity*.

In other words, don't compete with mass-market operating system vendors. They're selling products designed for the casual and amateur computer user. Instead, concentrate on giving your professional customers what they want and what they need. Perhaps OS/2 will never sit on most Intel-based desktops—but it will sit on the most important ones.



Alan Zeichick
Editor-in-chief



NEW FIBER OPTIC Pen Computing FOR THE DESKTOP

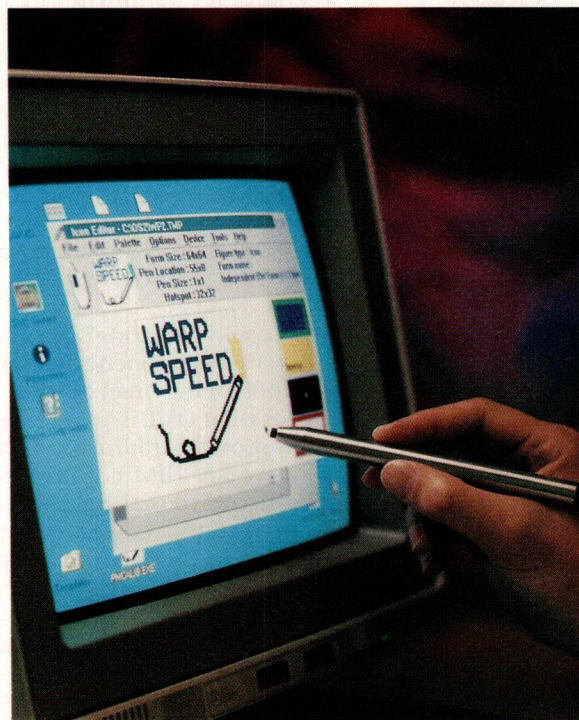
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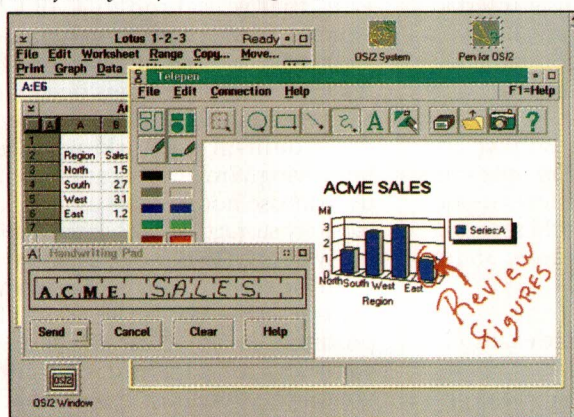
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Letters

The SIO test drive

Dear Editor:

I read Brian Proffit's review of the SIO (version 1.20) product in the February issue of OS/2 magazine with great interest. I would, however, like to draw two points of concern to your attention.

My first concern is the use of this product with Fax/PM. In the documentation that comes in the latest (1.24) copy of SIO, the author states that he has heard that Fax/PM does not work with SIO, but it has always worked for him. He also adds:

"Fax/PM's modem initialization and usage is a bit confusing to me. I believe they have an &F in an internal modem initialization string that is not visible to the user. This overrides any settings that the user has programmed into the modem and Fax/PM does not seem to provide an appropriate modem initialization string automatically. If my supposition is correct, this means that the Fax/PM user should always supply a complete modem initialization string and should not depend on preset settings they have programmed into the modem."

You could have at least portrayed both sides of the coin. I, personally, am not using it, but have a couple of colleagues who have had no problem with Fax/PM and SIO.

My second concern is Mr. Proffit's insistence on the speed aspect and his tendency to ignore some other aspects and problems with *com.sys* and *vcom.sys* that VSIO has corrected. Since I started using OS/2, I tried running all of my traditional DOS communication programs in a VDM. Most of them worked without a problem except for BINKLEY (heavily used in the FIDONET community). BINKLEY worked properly only the first time a Virtual DOS Machine (VDM) session was opened. If another communication

program was used before opening BINKLEY or after trying to run BINKLEY a second time within the same session, BINKLEY did not properly recognize a busy signal or a connect signal from the modem. The only workable solution was to close the VDM session and start a new one.

After trying various solutions without success, I posted a message in the BINKLEY FIDONET echo and had a solution within 48 hours: replace *com.sys* and *vcom.sys* with *sio.sys* and *vsio.sys* and install the VSIO FOSSIL *vxoo.sys*.

Five minutes after downloading the latest version of SIO from a local BBS, installing it and rebooting the system, my problem was solved. Apparently *vcomm.sys* has a problem which IBM refuses to recognize.

Thanks for your patience in reading this lengthy message. I sincerely hope that in the future, OS/2 Magazine will pay more attention to accurate and complete reporting.

Michel Slivitzky via the Internet
Saint-Raymond (Quebec) Canada

Thank you very much for taking the time to send us your comments.

*With regard to SIO and Fax/PM, I worked a good bit with the author of SIO before writing that review. He was well aware of the problems I had, but couldn't reproduce them with his particular modem. It was, however, quite repeatable with two modems of mine and I knew of several other people who had the same problem. I spoke with local representatives of Microformatic, the vendor of Fax/PM, who said they had sent a copy of their program to the SIO author, and that their product worked fine with *com.sys*.*

*Since the review has been published, Microformatic's home office in France has become interested and they contacted The Software Division, the makers of SIO, to work on the problem. It turns out that *sio.sys* was returning*

to the communications application prematurely. They have since fixed the problem. In fact, if you check the CompuServe forums, you will see that a new version of SIO (1.26c) has been uploaded. It specifically includes the fix for this problem.

While it was true that the problem did not occur under all circumstances—particularly with slower fax modems, it did occur in a large number of situations and in multiple types of modems. I felt that our readers needed to be aware of it. The good news is that the story caused those involved to take the problem seriously, and it is now fixed.

Your comments on BINKLEY are well-taken. Had I been aware that SIO fixed this problem, I would probably have mentioned it. Please bear in mind that there are literally hundreds of communications programs if you include all of the DOS programs and shareware, and it wasn't possible for me to test all of them with and without SIO. I did use several of the more popular DOS programs, including ProComm Plus, ProCommPlus for Windows, TapCIS, and QMODEM. Fortunately, OS/2's VDM support is good enough that most of them work fine (as you said all of yours did with the exception of BINKLEY) with the basic communications driver. So, I hope you'll understand how we might have missed SIO's benefit to this particular application.

I am most anxious for any and all suggestions you might have on how we can continue to improve our reviewing process. Please continue to send us your thoughts on how we're doing.

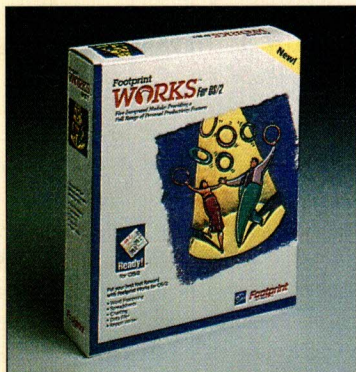
-Brian Proffit

Errata

The number listed in Dateline OS/2 in the March issue for information on IBM's OS/2 2.1 Service Release was incorrect. The correct number is (800) 494-3044.

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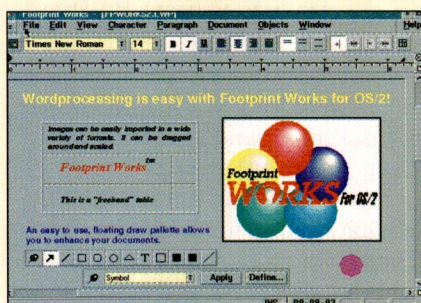
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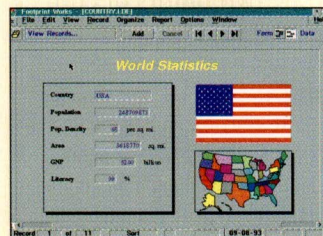
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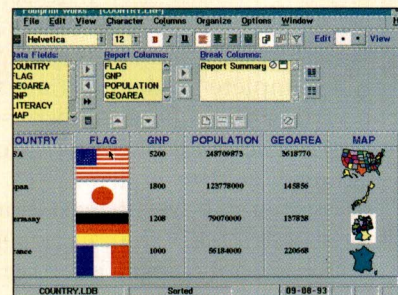


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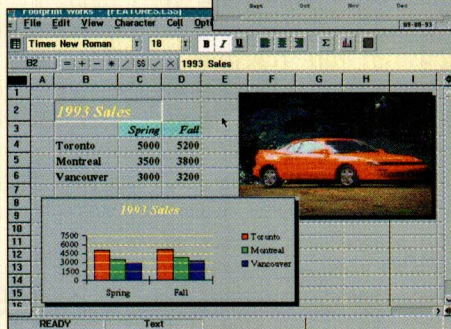
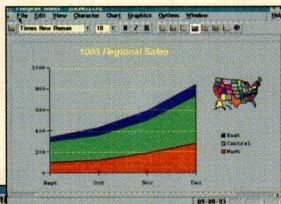
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AN UPDATE TO OS/2 2.1 AND WORDPERFECT'S BACK IN THE
OS/2 MARKET (SORT OF) BY ALEXANDER ANTONIADES

OS/2 2.1 Service Pak Released

IBM has officially announced the OS/2 2.1 Service Pak, a maintenance release of OS/2 2.1. According to IBM, the Service Pak addresses more than 500 bugs from the original OS/2 2.1 release and adds drivers that weren't included in the original package. The Service Pak, however, applies only to the original OS/2 2.1 and systems preloaded with OS/2 2.1. A separate maintenance release will be available for OS/2 for Windows at a future date.

The Service Pak is available electronically from various sources: on the Internet, go to the anonymous FTP site called *software.watson.ibm.com* and you'll find the files needed to make the Service Pak located in the */pub/os2* directory; you'll find the Service Pak on CompuServe in the OS/2 Service Pak Library (GO OS2SERV); and through Talklink, go to OS2BBS where the Service Pak is located in the software download library. The files are also available for downloading from the IBM PC BBS at (919) 517-0001. You can make as many copies of the Service Pak as you have licensed copies of OS/2. The Service Pak is also available by mail from IBM. The price is \$40 for the Service Pak in either 3½" or 5¼" disks, or on CD-ROM. For more information, call IBM at (800) 494-3044. It should be noted that the Service Pak has an installation command called *service* that will

**With the WPS
Integration Tools
installed, you can drag
and drop to
WordPerfect like a
normal OS/2 program.**

update OS/2 without having to do a complete reinstallation.

WordPerfect throws a bone to the OS/2 Market

Having received much criticism for abandoning the development of the OS/2 version of their word processor, WordPerfect Corp. is attempting to placate OS/2 users by offering a free set of plug-in modules for WordPerfect for Windows 6.0a. The extension will be tentatively called the OS/2 WPS Integration Tools, and is available directly from WordPerfect, electronically from CompuServe or from the WordPerfect BBS at (801) 225-4414.

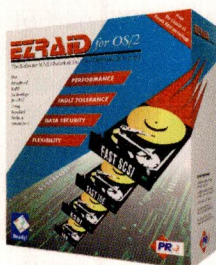
According to WordPerfect, these add-ons will give the Windows program much of the Workplace Shell functionality that WordPerfect 5.2

for OS/2 had—with a few key differences. With the WPS Integration Tools installed, WordPerfect will behave like a normal Workplace Shell program. This means it is possible to drag and drop into the WordPerfect program window to start or insert a document. It is also possible to change fonts and colors using the WPS color and font palette's drag-and-drop function, as long as the same ATM fonts are installed on the Win-OS/2 part of the operating system. Also included is the automated document detection feature, which registers any WordPerfect 5.x or 6.x document with the Workplace Shell. Once a document is registered, it has all the drag-and-drop functions of a WordPerfect for OS/2 document, including the impressive ability to drag and drop documents to a printer object and print them even when WordPerfect isn't running. However, all resources will come from Win-OS/2 and since WordPerfect 6.0a is still a Windows program at heart, HPFS file names will not be recognized.

At present, it appears WordPerfect Corp. will be supporting OS/2 only through WordPerfect 6.0a for Windows. But at least the OS/2 user who needs WordPerfect won't have to compromise quite as much with this new release. For more information on this new release contact WordPerfect at (800) 451-5151 or (801) 225-5000.

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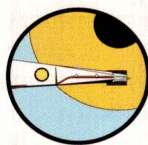
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Where Should You Keep Your Data?

THE INFORMATION SUPER-STORAGE SHED AND OTHER IDEAS BY AMY D. WOHL



With all this talk of information superhighways and cyberspace, I am beginning to wonder if we should start packing up all those bundles of data that clutter up our offices and let someone else keep them for us. It isn't likely that the rudimentary cyberstructure (I think we've just coined a new word) is capable today of accepting, storing, indexing, and rapidly retrieving your data, to say nothing of providing security and data integrity. But it may be time to start thinking of the data world as a different kind of multi-tiered hierarchy.

Of course, information systems people have often done that. We started with single-tiered hostcentric systems (remember dumb terminals?), where all the data was stored at the host, which we merely glimpsed shadows of on our terminals. With distributed two-tiered computer systems, data was stored in both hosts and minicomputers but was still not at the desktop, where dumb terminals still reigned. Finally, in the last 10 or 15 years, we have been moving to a three-tiered information processing model, by adding intelligent personal computers at the desktop. This model allows data to be stored and processed at every level of the architecture.

The arrival of the LAN gave us another way of offering a three-

**It may be time
to start thinking of the
data world as a
different kind of
multi-tiered hierarchy**

tiered architecture, substituting servers for minicomputers, but for many years these servers held only departmental data or copies of host data. Mission-critical organizational data always originated or ended up upstream, on host computers.

We are in the midst of scrambling the rules once again as we move to a client/server architecture, which means moving more and more processing further down in the model. It is not clear, however, where the optimum place for data storage might be. In the client/server world, data theoretically resides at the server level, where it can be shared by multiple clients. Anything, from a personal computer to a mainframe, can be a server, but most servers tend to be high-end PCs or workstations. Not all data gets stored on servers; personal data, used only by a single

individual, is usually stored within that worker's desktop device, usually a personal computer.

Of course, this architecture assumes a great deal of intelligent discipline. Data must be identified as something personal or something to be shared, then stored in the proper place. If personal storage is selected, but the data later becomes part of a group activity, it needs to be reclassified and relocated. This happens all too rarely, leaving users hunting fruitlessly for files that are hidden in inaccessible places.

Decisions about how to allocate server space vary widely. Many implementations simply regard the server as a shared filing cabinet for a work group. Each work group gets its own server and larger work groups (or very data-intensive ones) might get multiple servers. Others divide servers by function. For example: one server for communication activities, one for graphics files with special optical storage to accommodate large data objects, one for manufacturing data, and one reserved for contracts and purchase orders.

New considerations are entering the picture. Many users are counting on on-line services for significant amounts of data. Should they assume that downloading that data to their personal computing environment is the only available choice? Perhaps, for some kinds of computing, cyberspace (and a

cyberserver, unseen, transparent, infinitely large, and very cheap) is the right data storage environment. Think of huge shared databases like the census data that every market-research department uses to project demand. I don't want the data, I just want the right to query it. I may not even want to save my query sets in my own environment (because of their size and number), but I might want to be able to maintain them elsewhere—at a reasonable price.

The chance to automate some of the administrative chores presents another possibility. What if users could assign the task of identifying data sets that need to be moved from personal to shared status to a data agent? A kind of data housekeeper? If you trusted the housekeeper, or didn't care about the data very much, you could let the housekeeper make decisions and notify you by

changing status indicators and sending messages. For more sensitive data, you might put an approval step (yours, or a delegate's) in the process. Either way, you'd end up with data in the right place.

Other data agents could offer automated data queries, disk housekeeping, and data and directory synchronization. You're dealing with at least a four-tiered model. Here are the tiers:

■ **Desktop Database:**

Individual data access and manipulation tools, no doubt with a visual interface, and the ability to store reasonable amounts of data.

■ **Data Server:**

LAN-level data storage and processing that accepts queries from desktop devices, provides query tools for complex queries to higher level systems, stores and processes large databases,

and may be all the database capability the group requires.

■ **Host Database/Data Repository:**

Mainframe (and large minicomputers, if you can tell the difference) data storage and processing that stores and processes very large databases, accepts queries from data servers and desktop devices, downloads data and query results as required, and provides automatic updating and synchronization services.

■ **Cyberspace Data Services:**

I'm tempted to call this tier the Universal Data Server, (because, if properly implemented, that's what it would feel like) however, for now, it will be just like the Internet and CompuServe, containing dozens of different useful databases and services that are accessible to those who know how to find and use them. Let us say, we have a new set of possibilities and a lot of customers who would willingly use them.

The trouble with databases is that they're too useful. If they weren't, most computer users would throw up their hands and walk away, because they're also far too difficult to learn and use at any level of utility. But, by combining the newest and best visual interfaces on increasingly intelligent desktops with automated agents, (to do the worst of the dirty work) and ever more seductive information out there in Cyberspace, we'll get to where we want to be: transparently using the information we want, blissfully unaware of where the data's stored, where it's being processed, or how much work is being done.

Amy D. Wohl is president of Wohl Associates, a consulting firm specializing in office information systems, personal computing, and end user computing. She is also editor of the Trendsletter, a monthly newsletter on computer industry trends.

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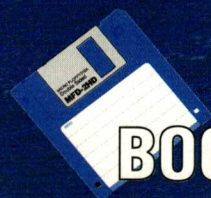
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Take This Job and Crunch it

CA SUPERPROJECT 3.0 AND ULTRACOMPRESSOR II BY BRIAN PROFFIT



CA-SuperProject 3.0

Computer Associates continues their strong move into the OS/2 market with the release of SuperProject for OS/2. Experienced project managers will find SuperProject a tool capable of managing quite complex projects. Those looking for a simple tool to help organize more modest tasks, however, may not be quite as pleased.

Getting started

As readers may have noticed by now, I take installation programs very seriously. I don't understand why vendors don't have someone follow the instructions in their documentation to see if they actually work. The SuperProject manuals instruct users to write-protect the diskettes before beginning installation. The installation program promptly gives you an error message that it cannot write to the installation diskette. (Undoubtedly it is writing your name onto the diskette as a copy-protection measure.) The product's credibility and professionalism was thrown into question during the first five minutes of exposure.

The last step of installation is creating the SuperProject objects on the desktop. For some reason, the folder SuperProject creates is in OS/2 1.3 format, with the object text beside, rather than underneath, the icon. That problem can be changed in the folder's settings notebook, of course, but why would

CA choose an obsolete format?

If you are new to project-management software, this product may not be the one to start with. Setting up a project can be quite complex, and CA apparently decided that OS/2 users were much smarter than average, because they did not include the tutorial with the OS/2 version. Some sample projects are included, but no documentation accompanies them. The "assist mode" helps, with a window on the screen that contains helpful information about the currently selected field. Everyone new to this program, however, should run the Project Manager's Assistant, a Realizer program that walks you through the process of creating an actual project. It isn't in lesson form like a tutorial, but it is a great help for getting started with the product. SuperProject can seem intimidating to the newcomer, even in the default Beginner Mode.

Top-notch functionality

Some people assume that information that comes from a computer must be correct. Somehow, detailed project layouts always seem so well-designed that their statements appear to be cast in stone as obvious pronouncements. I appreciate SuperProject's support for labeling of the duration or deviation settings for a task as Optimistic, Likely, or Pessimistic. It provides a more realistic view of the project, and simplifies estimation of the

likelihood of on-time completion.

Several different views of your project are available; each answering a different set of questions at a glance. The Resource Outline view will show you when you have some individual or resource overcommitted. Several horizontal and vertical varieties of PERT charts are included. The Task Outline pulls it all together with a view of each of the tasks, and linked histograms to indicate dependencies. In fact, so much information is available in each view that I strongly recommend a screen with resolution higher than 640x480 to avoid a lot of horizontal scrolling.

One feature that is particularly nice is the one that allows you to link tasks in separate projects, which lets you break really large projects into a number of separate blocks that are easier to manage without losing any of the interdependencies. If the same resource is used in multiple projects, SuperProject can perform levelling of that resource across all projects.

SuperProject goes beyond tracking a person's time. Equipment, buildings, and even money can be tracked as resources through a project as well. These are handled differently. For example, a task that takes a person five days may map to seven days because of an intervening weekend or holiday. On the other hand, running an automated tester against your beta software may also take five

days, but the weekend days count since the process is automated.

To help with the entry of information required to track all of this while a project is in progress, CA bundled TimeSheet Professional (a Windows application).

The Expert Modes add more advanced functions, such as expanded priority levels and task types (everyone knows what ASAP

means, but sometimes in a project you need to schedule things ALAP—As Late As Possible). You can also differentiate between projects that are resource-driven, such as projects only one person can work on at a time (putting nine women on the project will not reduce the length of time required to produce a baby to one month), and effort-driven tasks, where adding more

people may speed up the project. You can specifically allocate overtime hours, and indicate the difference in cost (such as 1.5, or time-and-a-half) for those hours.

The complexity pays off with the insights it can provide about your project. After carefully drawing out your master plan, you may well discover that you have a person committed to working 95 hours one week! If you selected resource levelling, that conflict would be detected, and tasks would automatically be shifted and/or delayed as needed (and there are several ways the user can determine how levelling takes place) to get that person back within the number of hours per week you have allocated them. Smoothing is similar to levelling, except that it won't move tasks past a date that will cause a delay in the project.

A subset of CA-Realizer is included for use as the macro language, meaning that you can write complex programs to manipulate your project information.

On the other hand

As a legacy of its background, and to maintain compatibility with the Windows version, project names are restricted to standard 8.3 filenames. The least-common-denominator attitude continues to plague OS/2 applications. Why force someone to live with *proj1.pj* when OS/2 allows names like *The_Anderson_House_project*? Cross-platform compatibility is an important feature, but it should be an optional one. If the user wants to use long filenames, they should be able to do so, understanding that they won't be supported by the Windows version of the product. What's worse, help panels tell people to enter a valid DOS file name. They describe the 8.3 naming convention for any who don't know it. That should be sufficient, without

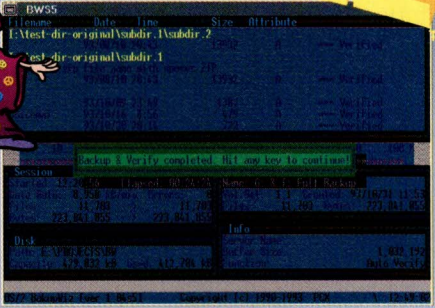
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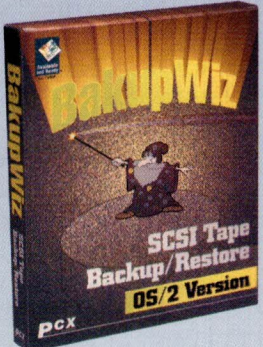
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Table 1: Comparison of Archive Programs

	Minimum Compression		Medium Compression		Maximum Compression	
	Time	Size	Time	Size	Time	Size
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PKZIP 2.04g (DOS)	:15	10,579,043	:28	486,603	1:04	482,692
PKZIP 1.10 (OS/2)	:14	614,044	:34	587,954	1:11	543,154
Ultra Compressor II (DOS)	:51	493,342	1:01	475,362	1:19	464,256

making OS/2 users think they're being cheated. (This approach is undoubtedly a reflection of CA's attempts to keep the Windows and OS/2 versions as similar as possible. The interface is predominantly handled via Microsoft's Windows Libraries for OS/2 (WLO) conversion layer, and it has some disconcerting delays, flickers, and repainting of windows that are probably attributable to the eccentricities of WLO.)

Second, why did they change the Close in the File menu pull-down to Discard? Everyone is used to seeing Close there. Using Discard makes it seem as though the file is also being deleted. The strength of standards in interfaces is that they cut down on training time. Third, the program has some unpredictable anomalies. When opening a project, you may find yourself looking at a help screen for an option you never selected, or a dialog box to select options for a view—rather than the default view of the project.

The interface has its good points, however. For example, SuperProject makes good use of tool bars, by allowing the buttons to change to reflect appropriate functions for whichever view is currently being shown.

Still, the OS/2 version of the product is less functional than the Windows version in a couple of other key areas. DDE and embedding via Paste-Link are not supported! CA promises this oversight will be addressed in the near future, but why ship the product in this state?

Glee or Flee

You can't blame Computer Associates too much for the complexity—real project management is a complex function. SuperProject provides more functions than many products, and does so while allowing file sharing across many operating platforms. Unfortunately, without DDE or Paste-Link, communication with other applications is greatly hindered.

If you look at this product as the version 1.0 for OS/2, it is easier to overlook the difficulties and to applaud the great depth of function the product offers. With a list price of \$649 for the package, which contains both OS/2 and Windows versions (dropped from \$895 for the Windows version alone), it is clear that the product is targeted for serious, trained project managers. Those people need the high functionality more than they need a simple interface, and this product is excellent for them. Those looking for an easy-to-use product that helps them get started with project management should look elsewhere.

ULTRACOMPRESSOR II

Ad Infinitum Programs

UltraCompressor II is a new archiving software that you may find discussed and advertised in OS/2-related areas. Don't be misled—UltraCompressor II (UC2) is not an OS/2 product. It is strictly a DOS executable program. It can be configured to store OS/2 extended attributes in the archive, so we should give it credit for being OS/2-aware. Still, it is of no value to those

running OS/2-only or High Performance File System (HPFS) computers. The President of Ad Infinitum Programs, Nico de Vries, makes a familiar promise: "In the future we will create a 32-bit OS/2 version with HPFS support, but the current version already fits the needs of many OS/2 users."

UC2 offers a number of nice features, including the ability to encrypt archives and add checksum-type details to an archive to help aid in the recovery of lost information. They also make a big deal about the ability to include multimedia banners.

The on-line help is much richer than the competition including a handy configuration aid. UC2 is the only archiver that I've seen detect hidden files and ask if they should be included in the archive. Some fun bugs are also included: for example, if you don't specify any options on the command line, you receive a "Fatal Error: unknown option -R."

The compression vs. speed trade-off

Still, the real key to a program like this is the compression. What it comes down to is how much compression you're willing to wait for. If you're looking for absolutely the tightest compression, and you don't mind how long it takes, UC2 is the right product. On the other hand, if you're looking for good compression and good performance, this product isn't for you. If you typically just compress and decompress files, you will find UC2 is a poor performer, taking three times as long as ZIP and PKZIP.

UC2's performance does shine, however, in the updating of existing archives. UC2 often takes less than half the time of ZIP or PKZIP to replace a file in an existing archive. Keep in mind that, when running programs in the background, the performance of DOS programs such as UC2 degrade much more than OS/2 programs

Table 1 reflects the comparison

of archive programs, based on compressing a subdirectory containing a combination of plain text, binary, graphic, and previously archived files. 34 files were used in the comparison, taking up 3,985,071 bytes before compression. The DOS programs were started from a DOS command window. Approximately seven seconds of overhead should be added to the above times if the

DOS programs are started from an OS/2 command prompt. The times shown are the average of three runs.

Glee or Flee

To put Table 1 in perspective, using medium compression, UC2 makes an archive file 88.0% smaller than its components, while ZIP 2.0.1 makes an archive file 87.0% smaller than its components. The one percent increase in compression (into a non-standard file format) by the \$43 DOS-based shareware UC2 comes at a cost of much more than twice the execution time of the OS/2-based freeware ZIP. Unless that extra one percent of compression is important to you, save your money—and more importantly, your time.

Brian Proffitt has been in the computing industry for 20 years. He was part of IBM's OS/2 team, left IBM to become the director of PC Week's Corporate Labs, and is now the president of Visionary Research. Brian is the author of two books on OS/2: OS/2 Application Development Tools, and OS/2 Inside & Out. He has written for several publications, including Dr. Dobbs' Journal and PC Week, and is a contributing editor for OS/2 Developer. He can be reached at CompuServe 75300,1466, or Internet 75300.1466@compuserve.com.

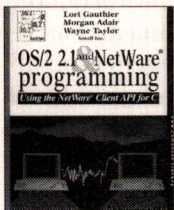
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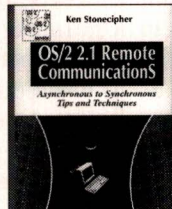
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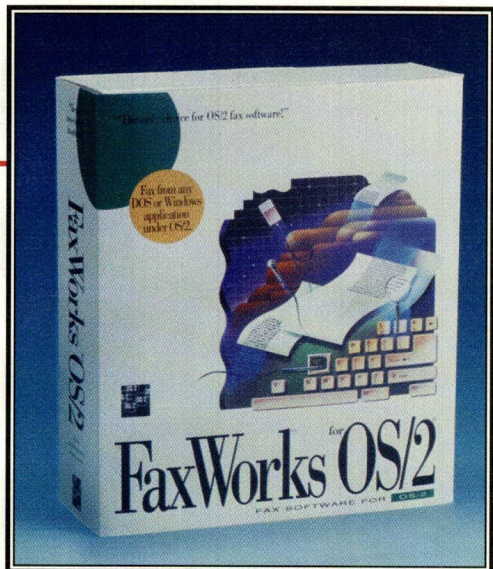
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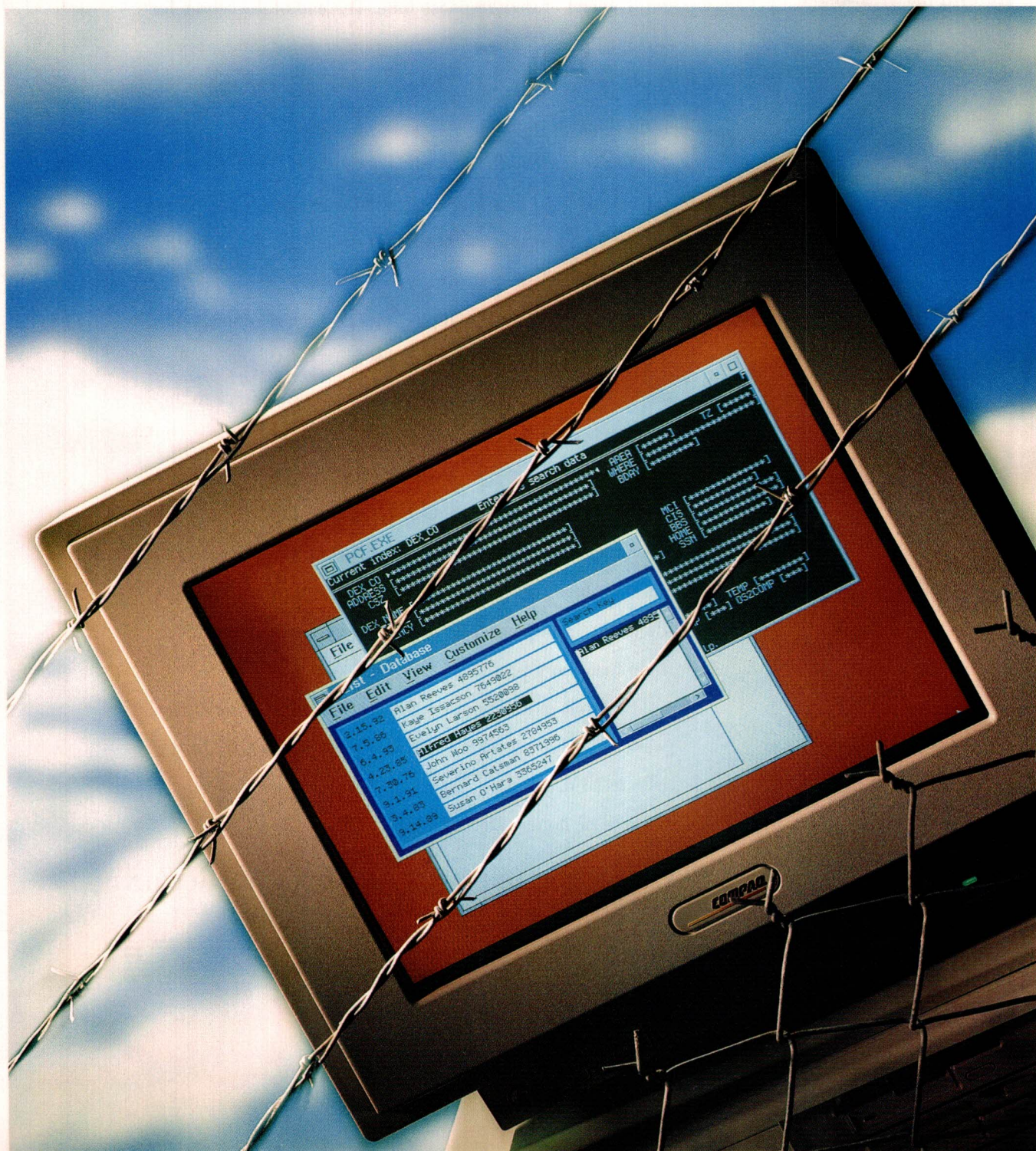
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Database security in the OS/2 environment.

By Ellen Adams



Batten Down the Hatches

In the cinema classic *Mutiny on the Bounty*, Donald Crisp distinguishes between his victims and his captain with a great line: "Nobody calls me a thief but the man I steals from." Chances are that you would not be able to recognize a corporate thief if you saw one, either. They carry no weapons, no crow bars, no night torches or bags for booty. They don't dress in black and wear masks. Stealthily, though, these swindlers can dip into your treasure trove of information, often siphoning away valuable data without you even realizing they were there. In a data theft, there are seldom tell-

tale signs like broken windows, shattered glass or even fingerprints to betray the fact that a crime has been committed.

But a data theft can be even more devastating than a brutal burglary. Commercial professionals are using databases to run their entire businesses, from scheduling appointments to printing payroll checks, generating sales statistics, invoices, mailing lists, expense reports, purchase orders, and correspondence. Database publishing is an especially popular and easy way to produce catalogs, product lists, directories, parts inventories, marketing promotions, and form letters. If the database is compromised, copied, or carted away, the business that depends on it could crater.

Casting the net

Databases are especially vulnerable to attack by corporate thieves. As your information is subjected to more and more users, its exposure and, therefore, its vulnerability, increases. Unfortunately, the reasons that make OS/2 such a rich environment for database design—its superior multitasking and file-sharing capabilities—are the very features that make it most susceptible to assault.

OS/2 comes with a database facility, PM Database, which gives novice users a good idea of how the basic database program works, and can help determine additional requirements they might have of a professional application. OS/2's PM Database lacks sophisticated security features—a notable omission. Therefore, most business users will use a third-party product.

Locks and schemes

OS/2 database systems currently use a variety of mechanisms to maintain security and data integrity:

Even heretofore **DIFFICULT FILE SWAPS BETWEEN SYSTEMS AS DISSIMILAR AS OS/2 AND MACINTOSH ARE SIMPLE WITH BINARY FILE COMPATIBILITY.**

ty: file locking, user identification hierarchies, and passwords. Borland's Paradox lets users set up rules between tables so data is always valid. Others use elaborate encryption schemes. Because databases are typically shared resources, most database management systems use synchronization and update schemes.

OS/2 users are already well-acquainted with the operating system's well-integrated networking support. Companies like Claris (Santa Clara, Calif.), makers of FileMaker Pro for OS/2, are building robust applications with multi-user support. All companies can increase productivity as they sort and share information across connected workgroups. However, protecting data becomes more problematic as the net is cast wider.

Rita Khurana, information systems manager for the City of Los Angeles, said, "Security has been a real problem for us. We have a DB2 database with 200 tables spread out on a LAN with 200 clients. We have a system of passwords and IDs set up, but we don't want people to have to enter their IDs twice." Khurana is currently evaluating a variety of systems for use in her department.

Now databases can provide IPX and SPX support in NetWare environments, and NetBIOS in Microsoft LAN Manager, Artisoft LANtastic, Banyan Vines, and Windows environments. Even heretofore difficult file swaps between systems as dissimilar as

OS/2 and Macintosh are simple with binary file compatibility. Users share database layouts, scripts, graphics and other attributes transparently between these environments.

Extending Services with Database Manager

Bob Holmes is another user who, like Khurana, shares sensitive data across multiple disparate systems. Holmes, a technical consultant for the Southern California Gas Company, maintains his OS/2 database security with an administered system of user IDs and passwords. Holmes is a fan of IBM's Extended Services Database Manager, a relational database system developed for OS/2's client-server environment.

Database Manager consists of several modules. The first component, Database Services, contains the core functions of the program. Users manipulate the program by using Structured Query Language (SQL) statements that create, manage, and access data. The system allows users to access data from single or multiple databases on their workstations.

Holmes said he issues a dynamic SQL statement to update a database table. However, with multiple users on a network of 4,000 plus workstations, PCs, and terminals, managing the update process can be tricky. Custom macros are required to maintain data integrity. "Often you'd have no way of knowing that any editing of your update took place," Holmes said.

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"So the way you get around it (and this statement is true of SQL databases in general) is by essentially requiring a schedule of update privileges done by bound static SQL," he added. "This way, you know that bound SQL is originating from a routine you have written, which is doing appropriate edits before it submits the update. User frustrations originate from the fact that you often don't know if you're dealing with a trusted partner," Holmes said. "You can grant read-only access to a table so that certain people won't be able to write to it. Write access is granted only through a bound static SQL."

Supporting Static SQL

The problem with this method of database management in the OS/2 environment is the fact that many applications don't support static SQL. Holmes said he solved this problem by writing his own C-language DLL that has static SQL control language in it. "That way, we aren't giving update privileges to everybody who can sign on and run the application," he said.

OS/2: Abundant Database Environment

The advanced memory management and preemptive multitasking capabilities of OS/2 make it an ideal environment for many applications, but especially for lumbering databases like the Contract Administration and Accounting Administration databases that Holmes maintains for the Southern California Gas Company. Databases are typically big and bulky, characterized by voluminous files. They eat memory. And database managers on the market are memory hogs as well.

But large as they are, databases are seldom valuable alone. Many must be paired with other programs—personal information managers, contact managers, word

The advanced MEMORY MANAGEMENT AND PREEMPTIVE MULTITASKING CAPABILITIES OF OS/2 MAKE IT AN IDEAL ENVIRONMENT FOR MANY APPLICATIONS—ESPECIALLY LUMBERING DATABASES.

processors with mail-list facilities—to be truly useful to the bulk of OS/2 corporate users. That's where users can really appreciate OS/2's multitasking capabilities. Mark Minasi, one of the authors of *Inside OS/2, Special Edition* (New Riders) defines the difference between the true preemptive multitasking of OS/2 and the context-switching of programs like Macintosh Finder in System 7 and Windows. "Multitasking is the capability to run multiple programs at the same time on the same computer. Context- or task-switching enables you to load multiple programs into the computer at the same time but run only one program at a time. Both applications do not run simultaneously. To shift from one application to another, you click the mouse button...you do not have to exit one program and wait while another loads," he said.

When working with databases, the limitations of other operating systems and the advantages of OS/2 become very apparent. "Context-switching can be helpful, but you might want programs to continue to run after you have stopped using them. If you switch from Borland's dBASE while sorting a file, for example, the file is not sorted when you return to dBASE, the process is suspended until you reactivate dBASE," Minasi said. With OS/2 as your database environment, however, limitations like this disappear.

Multitasking & Multimedia

Multitasking is important to Tony Fardella, but so is maintaining his database security. Fardella, who is

president of Fardella Engineering Enterprises of San Jose, Calif., selected OS/2 after first becoming frustrated with the limitations of Windows as a database environment. Fardella noted, "I use OS/2 because of its many multimedia advantages over other systems. I investigated Windows, and ran into problems when I was trying to playback a multimedia movie. I could not get its audio capabilities to function properly. And I wanted to use a database with audio fields. Now I use FileMaker Pro and fully functional OS/2 2.1"

FileMaker Pro offers users the ability to integrate multimedia graphics and sound into their OS/2 databases. Paradox by Borland offers similar capabilities. With Paradox, users can store multimedia objects, digitized sound, and CAD schematics in a database. Paradox also allows for graphic fields that can contain bit-mapped graphics. FileMaker Pro lets users manipulate the database via audio. Using a multimedia-equipped machine, users can capture and play back sound within database records. And that capability is what lured Tony Fardella to OS/2.

Fardella markets custom interactive kiosk systems for business, entertainment, and industry. His most popular product is the Contest Lottery/Money Machine, a custom software system he markets to radio and television stations. Fardella uses the software to create custom interactive promotions that the stations then use to gather demographic data on their customer bases.

Since his business idea is new and unique, Fardella said, securing

his records was of prime importance. But he also needed the ability to incorporate similar security measures into his products. The FileMaker Pro system has a number of mechanisms for data security. Users define and modify user restrictions with multi-level passwords. A Network Access Overview function lets the database manager monitor selective access to sensitive reports and data. The system comes with an Automatic Record Locking and Release function that, similar to Bob Holmes' custom C-language routine, ensures data integrity in a network or work-group situation and prevents multi-user network conflict.

Security for all

Fardella said that the security is an important issue not only to him, but to those stations that will be using his system to create their own OS/2 databases, which must

be also be secured. "I keep a listing of my customers, their names, addresses, and phone numbers. In the product, I also include a Survey Cypher, or back-office manager, that I use to collect demographics on my customer base," he said. "I include all the answers to a survey that I include with my products. The survey features questions like, 'do you own or rent your home?' 'are you in the market for a new car?' I use FileMaker Pro to sort and file these responses and comments and this shows me where they stand."

This type of information can be extremely valuable to a business, but even more valuable to a competitor. Fardella tells his customers that their overall program security is fail-safe. "Program control is protected by a 31-character password which is not accessible to anyone," he said. "Other passwords for on-site staff, management and promo-

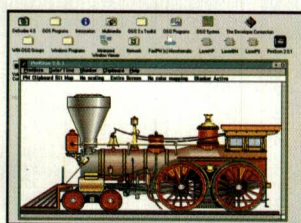
tional staff allow only utilitarian access to the Contest Lottery Money Machine program."

Horse sense and security

But nothing is fail-safe. Bob Holmes said common sense should prevail when considering database security. "The point is, when you have something critical to your operation, it should be secured. It ought to be behind a locked door where access is controlled and only authorized personnel can get at it. And it probably ought to be a door that's card-keyed so you know who was in there and when," which is probably the only way you'll be able to spot today's high-tech thieves.

Ellen Snell Adams is an Austin, Texas-based free-lance writer. Her articles have appeared in CADENCE, LAN Magazine, Corel Magazine, and Computer Gaming World.

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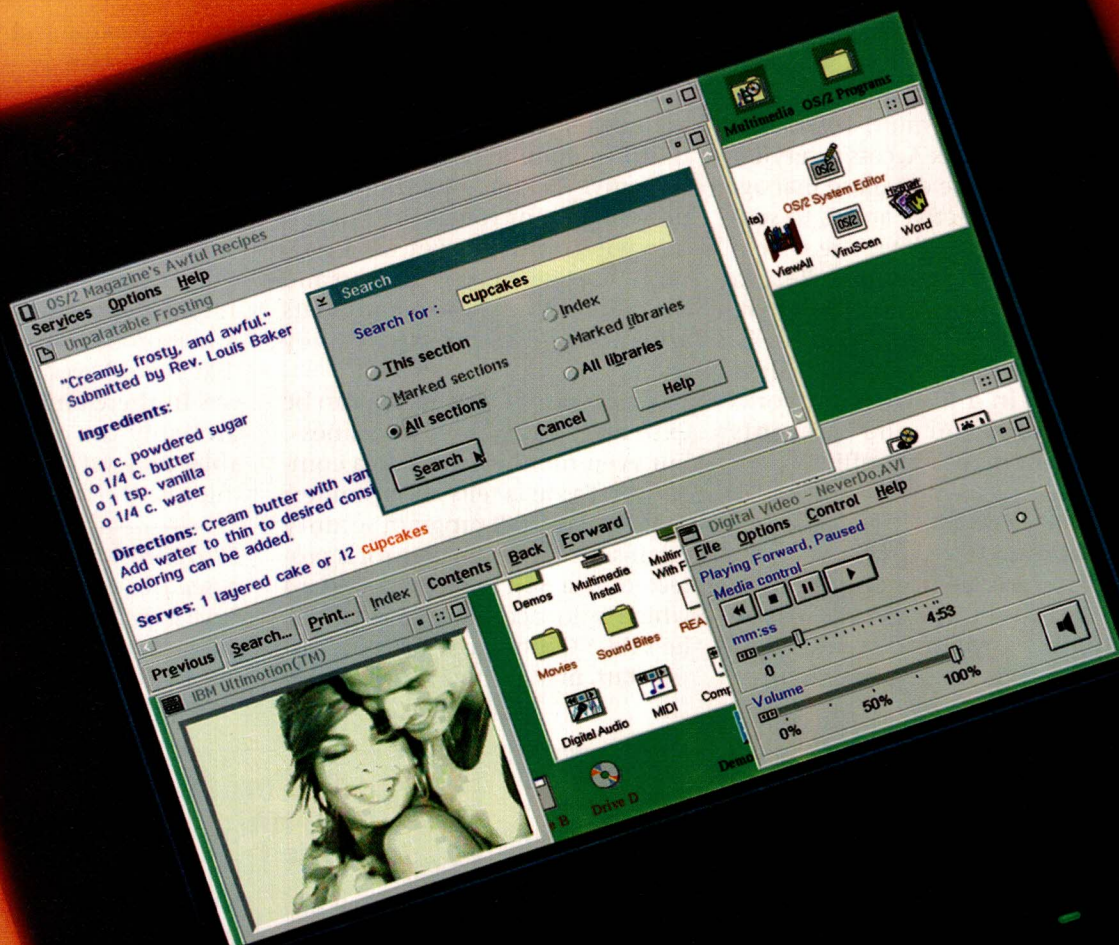
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An introduction to writing *.inf* files By Timothy F. Sipples

Presenting On-line Information

OS/2 includes a powerful hypertext help system called the Information Presentation Facility (IPF). IPF has been a part of OS/2 for many years, and application developers have used it to produce context-sensitive help files for their products. However, with the release of OS/2 2.0, IBM decided to document the methods used to create stand-alone help files, also called *.inf* files. It is no longer necessary to create an application to use OS/2's help facilities. You can easily construct files that behave like IBM's on-line Command Reference (located in the Information folder if you elected to install it when you installed OS/2 2.0 or later).

IBM's decision has resulted in an explosion in the number of freely distributed *.inf* files available to OS/2 users. Electronic documents such as IBM's own *PS Assistant* and OS/2 Developer's Toolkit references were soon joined by my own *OS/2 Frequently Asked Questions List*, user group newsletters from several cities, Shakespeare's sonnets, a recipe guide for mixed drinks, and several other publications. These *.inf* files are being distributed through OS/2 BBSs, CompuServe, the Internet, and other on-line services. Also, companies and individuals

are creating *.inf* documents for their own internal use to keep track of operating procedures, stamp collections, family trees, and more. Creating your own OS/2 help files does not involve a lot of effort, especially if you take a little time to plan ahead.

How do *.inf* files work?

All OS/2 help files are created from plain ASCII text files that have been embedded with special commands (called "tags") to define document sections, special formatting, hypertext links, and other attributes. These text files are then compiled into a single binary file with a filename ending in either *.inf* or *.hlp*, depending on the author's choice. *.hlp* files are used as part of the on-line help provided with applications. *.inf* files are available as stand-alone references, viewable with, not surprisingly, the VIEW program. (VIEW is supplied with every copy of OS/2.) I will focus on creating *.inf* files, but the procedure used in the creation of *.hlp* files is almost exactly the same. For a discussion of the minor differences, refer to the appropriate IBM documentation.

The tool used to convert these tagged text files to *.inf* or *.hlp* formats is called the Infor-

Listing 1: The original text file.

Glue Biscuits.

"So good, they taste like glue!"

Submitted by Caroline Smith

Ingredients:

1 c. flour
1/4 c. water
1 tsp. baking soda
1/4 c. canola oil

Directions: Sift flour into bowl. Mix in baking soda. Slowly add water and oil while stirring. Form dough into round portions, place on cookie sheet, and bake in preheated oven for ten to twelve minutes at 450 degrees F.

Serves: 8 to 10

Disaster Cupcakes

"Your child will wish for his last birthday."

Submitted by John Cooper

Ingredients:

2 c. flour
1 c. cane sugar
1 tsp. vanilla
1 tsp. baking soda
1/4 c. canola oil
2 eggs
1/2 c. water
Unpalatable Frosting

Directions: Follow the directions in Glue Biscuits, then add in vanilla, eggs, sugar, remaining water, & remaining flour. Fill paper cupcake molds about 1/3 to 1/2 full with batter. Place cupcakes on cookie sheet, and bake at 350 degrees F for 20 to 25 minutes. Remove from oven and let cool for 45 minutes. Frost with Unpalatable Frosting.

Serves: 10 to 12

Unpalatable Frosting

"Creamy, frosty, and awful."

Submitted by Rev. Louis Baker

Ingredients:

1 c. powdered sugar
1/4 c. butter
1 tsp. vanilla
1/4 c. water

Directions: Cream butter with vanilla. While stirring, slowly add powdered sugar. Add water to thin to desired consistency. Can substitute other flavoring, and food coloring can be added.

Serves: 1 layered cake or 12 cupcakes

mation Presentation Facility Compiler (or IPFC for short). IPFC is included with several development tools for OS/2, including the low-cost C Set++ FirstStep. The compiler translates the tagged text into a compact format that can be rapidly read and processed by VIEW (or, in the case of *.hlp* files, by OS/2's closely related help engine). The compiler also automatically constructs an index of key words for the document, which can be searched by anyone reading the document with VIEW. Hypertext links (the ability to double click on a highlighted word, phrase, or picture to jump to another section of the document) are also placed in the *.inf* file according to the original author's wishes.

An *.inf* file is most suitable for a document that meets the following criteria:

- It is fairly frequently accessed (such as a reference manual or "how to" guide). The whole point of converting a printed document or word processor file into *.inf* format is to be able to readily access it conveniently from the OS/2 desktop. If the information is rarely used, you are probably better off relegating it to a dusty filing cabinet.
- It lends itself to indexing and division into sections. Most people prefer reading documents on paper. Although *.inf* documents can be printed, you want to try and avoid forcing your reader to stare at the screen for long periods of time, reading through verbose (and unbroken) sections of text. *.Inf* format was not intended for short stories or plays, for example. It works best with documents that contain many cross references, sections, and subsections.
- Documents that are rarely accessed in the same sequence each time they are used. *Inf* format provides the ability to use

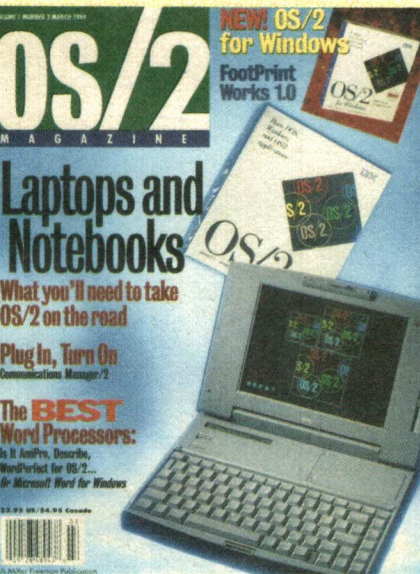
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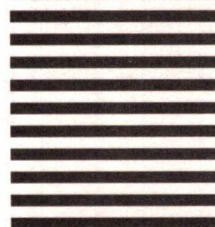
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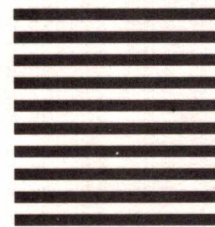
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hypertext links, to allow the reader to jump from section to section at will. Such documents include repair manuals, operation guides, recipe books, and so on.

- Documents that are not updated more than perhaps twice a month. If the information is subject to change on a daily basis, for example, you will want to explore the use of database software rather than the .inf file format. Changes can be made to any .inf file quite easily, but you must then recompile the entire on-line document and distribute the complete, potentially large .inf file to all your readers.

.Inf files are similar to other forms of publishing in that illustrations, diagrams, and tables can be used to convey information. On most OS/2 systems, you can also use color to enhance your on-line document.

Getting Started

Suppose you want to transform your recipe collection into an OS/2 .inf file. The original, fictitious, plain text document appears in Listing 1. You may want to type it in and save it as *first3.ipf*.

The IPF compiler expects several tags to construct any on-line document. *Every tag* (with three exceptions) *begins with either a colon or ampersand and ends with a period*. An ampersand is used to insert "special characters," which really means either a colon or ampersand. So, to prevent IPFC from interpreting colons and ampersands in your original document as tags, you must first replace them with **&colon**. and **&amp**. respectively. You can use the search-and-replace feature in most text editors (including the OS/2 System Editor) to get the job done. So, for example, the first two lines in the directions to recipe #2 would read:

Directions&colon.

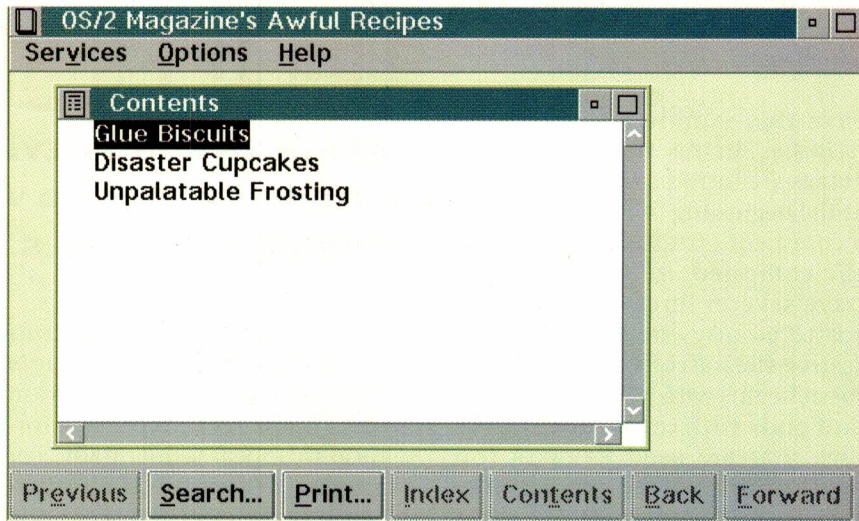


Figure 1: Contents Window.

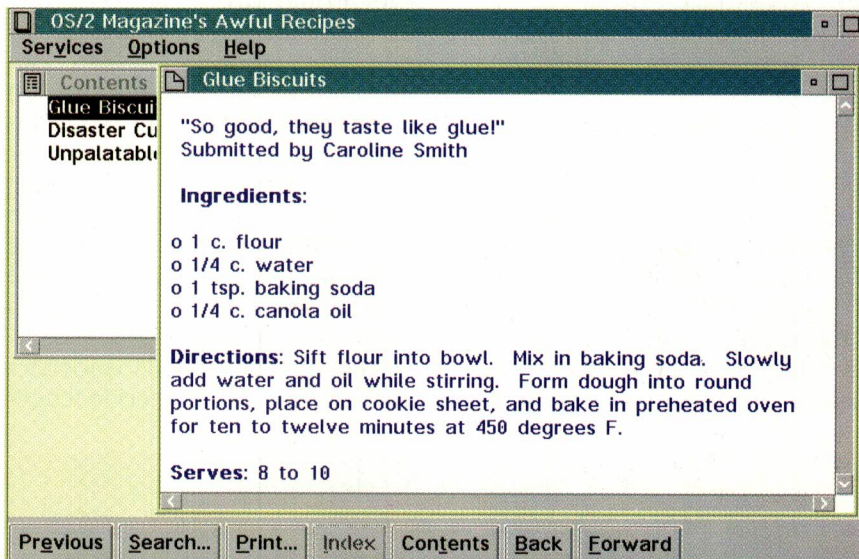


Figure 2: Unordered List with Compact Option.

Follow the directions in Glue Biscuits, then add in vanilla, eggs, sugar, remaining water, & remaining flour. Fill paper cupcake molds about 1/3 to 1/2 full with batter.

Now save your work in the file *first3.ipf*.

Unfortunately, IPFC expects every plain text file it uses in compiling the .inf file to be less than 65,536 (64K) bytes in size. In this

example, you will not encounter this restriction, but you should plan ahead. Most .inf file authors create a master file that lists all the other plain text files to be used by IPFC. The master file for this example might look like this:

```
.* Master file for Recipes
:userdoc.
:title.OS/2 Magazine's Awful
Recipes (May, 1994)
:docprof.
```



```
.im first3.ipf
:userdoc.
```

Save this sample master file as *recipes.ipf*. In this master file, several tags are introduced. If `.*` appears at the beginning of a line, it signals a comment (not to be included in the compiled *.inf* file). You can have several lines of comments scattered anywhere in your IPF source files. Every on-line document begins with the tag `:userdoc.` and ends with `:userdoc.` (Most tags that are used to mark the beginning and end of sections, such as those that create tables and lists, are paired much like `:userdoc.` and `:userdoc.` To end the marked section of text an `e` is simply added to the original tag name.)

The `:docprof.` line instructs IPFC to use the defaults for which headings are displayed in the Contents Window, which pushbuttons to provide the reader and some other information. You can override these defaults by specifying certain options after `:docprof` but before the period in the tag.

The tag `.im` instructs IPFC to embed a file (in this case, *first3.ipf*, our three recipes). You can include several `.im` lines in your master file,

The IPFC utility

IS GENERALLY AVAILABLE AS PART OF THE OS/2 DEVELOPER'S TOOLKIT, WHICH IN TURN IS PROVIDED WITH SEVERAL OS/2 PROGRAMMING TOOLS.

but you must specify them in the order in which you want them to appear in the final document. (This restriction is important. IPFC expects information to appear sequentially. For example, in Listing 1, the recipes are already alphabetized according to the foods' nouns. If they were not, and if you wanted the recipes alphabetized in the final *.inf* file, they would have to be reordered, probably using a text editor's cut-and-paste facilities.) You can include drive and path information if the embedded files are not located in the default directory. (The comment tag `.*`, the embed file tag `.im`, and the break tag `.br`, which causes IPFC to insert a line break into the final document, are the only tags that do not begin with a colon or ampersand.)

The `:title.` tag is used to provide a name, up to 47 characters in length

(including spaces), for the on-line document. This title will appear in the document's title bar and in the OS/2 Window List. You may want to include a revision date here (or early in your *.inf* document).

Now, switch back to *first3.ipf*. You must now define the sections of your document. These sections are called *heading levels*. IPFC supports up to six heading levels using the tags `:h1.` through `:h6.` By default (by including the `:docprof.` tag in *recipes.ipf* without any special options), only heading titles tagged with `:h1.` will display in the initial Contents Window when VIEWing your *.inf* file. Subheadings and sub-subheadings (tagged with `:h2.`, `:h3.`, and so on) are then accessed from the Contents Window by clicking on plus symbols located to the left of the next higher heading. Every document must include at least one `:h1.` tag. Tags for lower heading levels (`:h2.` and lower) must be preceded by a heading level no more than one higher. For example, a heading marked with `:h3.` cannot follow a heading marked with `:h1.` unless there is an `:h2.` somewhere in between.

Headings really create "pages" (or windows) for your on-line document. The heading title is placed in the title bar of the window, and any text or artwork that follows in your IPF source (up to the next heading level) becomes a part of that particular window.

The heading organization for each on-line document will naturally vary. In this simple example, each of the three recipes is given a first-level heading. Headings can

Obtaining the IPF Compiler

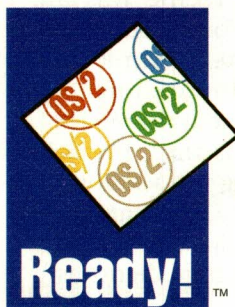
The IPFC utility is generally available as part of the OS/2 Developer's Toolkit, which in turn is provided with several OS/2 programming tools, including many of those produced by such companies as IBM, Watcom, and Borland. IPFC is not sold separately.

If you do not already have IPFC, probably the least expensive way to obtain it is to purchase either IBM C Set++ FirstStep (a C/C++ compiler for OS/2 available on diskette and CD-ROM) or CA-Realizer (a visual BASIC interpreter) from Computer Associates. Either one costs less than \$100. Both are available from major OS/2 software vendors (Indelible Blue, The Corner Store, and many others). CA-Realizer does not, however, include the full OS/2 Developer's Toolkit.

On-line documentation (in *.informat!*) is provided for IPFC in the VIEWable file *ipfc20.inf*. Printed documentation is also available in the form of IBM's *Information Presentation Facility Guide and Reference*, IBM Publication No. S10G-6262. Most IBM books can be ordered by calling (800) 426-7282 [(414) 633-8108 in Alaska].

Many third-party tools have been developed to help in the creation of IPF source code. The OS/2 Shareware BBS at (703) 385-4325 carries many of these tools, including IPFE (a shareware IPF editor), the Help Development Kit (a utility to create help files for many different environments, including OS/2), and much more. Check with the OS/2 Shareware BBS (or almost any other OS/2 file repository) for the latest in free and shareware IPF tools.

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(and should) also be numbered using the **res** option so you can later add hypertext links to your document. So, in *first3.ipf*, make the following changes to these three lines:

```
:h1 res=0100.Glue Biscuits
:h1 res=0200.Disaster Cupcakes
:h1 res=0300.Unpalatable Frosting
```

The **res** numbers are spaced to allow you to insert additional windows (perhaps at lower heading levels) without renumbering.

Finally, IPFC requires that any information between headings carry some kind of formatting tag. In this simple example, the text of each recipe appears in each of the three windows. The most commonly used formatting tag for text is the paragraph (**:p.**) tag. As a general rule, you should place **:p.** tags wherever you see a blank line (or other paragraph break) in your original text document. So, for recipe #1, try making the following changes:

```
:h1 res=0100.Glue Biscuits
:p."So good, they taste like glue!"
.br
Submitted by Caroline Smith
:p.
Ingredients&colon.
1 c. flour
  1/4 c. water
  1 tsp. baking soda
  1/4 c. canola oil
:p.
Directions&colon.
Sift flour into bowl. Mix in
baking soda. Slowly add water
and oil while stirring. Form
dough into round portions,
place on cookie sheet, and
bake in preheated oven for ten
to twelve minutes at 450
degrees F.
:p.
Serves&colon. 8 to 10
```

Make similar changes to recipes 2 and 3 as well. Save all your changes to *first3.ipf*.

The **:p.** tag instructs IPFC to place the section of text that follows (up to any overriding tag or another **:p.**) in its own paragraph in the final on-line document. Spaces and line breaks (except those marked with **.br**) are ignored; all text is automatically reflowed to adjust to the width of the window. (In other words, when VIEWing an on-line document window with **:p.** tagged paragraphs, as you adjust the width of the window, all the text will still be visible.)

Compiling Your First .inf File

Make sure *recipes.ipf* and *first3.ipf* are located in the same directory on your hard disk, and make sure the IPF Compiler has been installed. Open an OS/2 command line (either window or full-screen). Switch to the directory holding your *.ipf* files. Then type:

```
IPFC /INF RECIPES.IPF > ERRORS.TMP
```

and press <Enter>. After a few moments, the command prompt will return, and you should find a new file called *recipes.inf* alongside your *.ipf* files.

Using any text editor or viewer, examine the file *errors.tmp*. If there are any problems with your *.ipf* source files, they will be listed here (along with line numbers). After correcting the errors, you can recompile.

Once you are satisfied that all errors have been corrected and that your *.ipf* files have compiled successfully, you can take a look at the final product. Type:

```
VIEW RECIPES.INF
```

A window should appear with the title of your on-line document in the titlebar and a Contents Window listing your primary headings. Browse through each page to see how the document appears. (Try resizing windows to verify that **:p.** tags really do work.) If you are not

satisfied with the results, go back to your original *.ipf* source files, make changes or additions, and recompile. When you are satisfied, you can distribute the *.inf* file as widely as you wish.

List Formats

You may have noticed that certain parts of this simple recipe document did not appear formatted correctly. In particular, the Ingredients section in each recipe was all lumped together. Fortunately, IPFC provides several text-formatting features in addition to simple **:p.** tags. To clean up the appearance of the Ingredients listings, the **:ul.** (unordered list) tag will work well.

First, reopen *first3.ipf* with your text editor. Then, make the following changes to the Ingredients listing in recipe #3:

```
:p.
Ingredients&colon.
:ul.
:li.1 c. powdered sugar
:li.1/4 c. butter
:li.1 tsp. vanilla
:li.1/4 c. water
:eul.
```

Make similar changes to the Ingredients sections in recipes 1 and 2.

The **:ul.** tag creates a list of items in the on-line document, and each item appears to the left of a bullet. Each item should be tagged with **:li.** and the list ended with the tag **:eul.** List items will appear in the order in which you enumerate them (which could be alphabetized or in the order in which ingredients are mixed together, for example). Items in any IPF list can be quite long and complex (with several paragraphs within a single item tagged with **:p.**, for example). Also, lists can often be "stacked." For example, if you want another, automatically indented list to appear between sugar and butter in the ingredients list, you can use the

following:

```
:p.
Ingredients&colon.
:ul.
:li.1 c. powdered sugar
:sl.
:li.or 1/4 c. sugar substitute
:li.or 1/2 c. honey
:esl.
:li.1/4 c. butter
:li.1 tsp. vanilla
:li.1/4 c. water
:eul.
```

In this example, the simple list (:sl.) tag is used. It behaves exactly like :ul., except no bullets are placed before each item. Note that :ul. could have been used here instead of :sl., in which case IPFC will create different bullets (dashes) in place of the standard bullet. If you do not want blank lines inserted between items, add the **compact** option to your list tag (as in :ul compact. or :sl compact.—see Figure 2). Related formats provided by IPFC include:

- :dl. Definition List. Two-column list format.
- :ol. Ordered list. Like :ul., but items are numbered (or “lettered” for sublists).
- :paraml. Parameter List. Two-column list format, similar to :dl.
- :table. Table. Multi-column list format.

Hypertext Links

Recipe 2 in this example contains three references to other recipes in the collection. The Ingredients list has a reference to Unpalatable Frosting, and the Directions paragraph has references to both of the other recipes. This situation calls for *hypertext links*, to enable the reader to easily jump from one section to another by double clicking on a highlighted item. To construct a hypertext link, use the :link. tag as follows:

OS/2 bitmaps AND METAFILES ARE GENERATED USING OTHER APPLICATIONS AND UTILITIES.

```
:p.
Ingredients&colon.
:ul.
:li.2 c. flour
:li.1 c. cane sugar
:li.1 tsp. vanilla
:li.1 tsp. baking soda
:li.1/4 c. canola oil
:li.2 eggs
:li.1/2 c. water
:li.:link reftype=hd
res=0300.
Unpalatable Frosting:elink.
```

The **reftype=hd** option tells IPFC to link to another heading (or window), which is the most common form of linking. The **res=0300** option links to heading 0300 (the number assigned as part of the :h1. tag for Unpalatable Frosting). The recipe name is given as the text to highlight in the on-line document (to indicate to the user that it is a hypertext link), and :elink. marks the end of the highlighted text for the link.

In the Directions section of the same recipe, try adding two :link. tags for the two recipes mentioned. The link for Glue Biscuits should have a **res=0100**. Other linking tags include:

- :artlink. Identifies bitmaps or metafiles for linking.
- :fn. Creates a pop-up window (or “footnote”).

Text Attributes

Adding color, alternate fonts, and other text attributes can help liven up your on-line document. In this example, you may want Ingredients, Directions, and Serves” to appear in boldface. To do so, use the :hp2. tag as follows:

```
:p.
:hp2.Ingredients:ehp2.&colon.
:ul.
```

and so on, repeated for each of the boldface words in each of the recipes. (Note how the colon is placed outside the boldface tags.) There are nine standard text-attribute tags:

- :hp1. Italic
- :hp2. Boldface
- :hp3. Italic boldface
- :hp4. Blue
- :hp5. Underlined
- :hp6. Underlined italic
- :hp7. Underlined bold
- :hp8. Red
- :hp9. Pink

Related tags include:

- :color. Sets the foreground and background colors for text.
- :font. Sets the typeface, size, and code page for text.

Other Essential Tags

I have barely scratched the surface in describing what features are available with IPFC. The on-line or printed reference covers much more. However, a couple of other tags are commonly used and deserve mention.

If you have a section of text that you do not want reflowed to fit the dimensions of the window (such as a complex text diagram), you should use the :lines. tag to identify it. Unlike the :p. tag, you must explicitly mark the end of such a section using the corresponding :elines. tag.

The :lm. tag sets the left margin in a window, which can be useful for indenting portions of text. For

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example, to indent to column 10, use the tag **:lm margin=10**. To set the left margin back to its default of 1, just use **:lm**. without any **margin** value. The right margin can be set similarly using **:rm**.

Finally, the **:artwork**. tag identifies a bitmap or metafile (resolution-independent picture) for inclusion in an on-line document. OS/2 bitmaps and metafiles are generated using other applications and utilities. For example, Corel-Draw for OS/2 can be used to create illustrations for your **.inf** files.

The Information Presentation Facility Compiler allows you to construct information and help files that are attractively presented under OS/2. Planning ahead and organizing your source materials will help assure a smooth transition to **.inf** format. You should also examine what others have done in their **.inf** files to see what styles and formats work (and look) best. I hope more OS/2 users like me will be reading new and interesting "published" **.inf** documents in the near future. Perhaps even yours.

Timothy F. Sipples is a long-time OS/2 user. When he is not using (or writing about) OS/2, he is working on his PhD in economics at the University of Chicago. He can be reached through the Internet as sip1@kimbark.uchicago.edu.

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NetWare Fine Tuning

Optimizing the Novell NetWare Requester by Bob Panza

By design, parameters are the keys to precision tuning of network software. The result is a flexible system that can be readily adapted to meet different real-world requirements. Survival of a product in today's network environment demands such changeability. Novell's NetWare Client 2.01 for OS/2, also known as the NetWare Requester, is a chameleon that fits the bill.

Our tuning exploration will lead us to a few of many interoperability destinations. But numerous parameters must be considered before venturing onto the high seas of interoperations. Within the NetWare Client, *net.cfg* is the file where tuning takes place. However, *config.sys* and *protocol.ini* soon enter into the picture for interworking.

Perennial Packets

In the NetWare Client configuration file, *net.cfg*, parameters cover a lot of ground. Each option may contain multiple settings, which are indented on lines following the option line. Important *net.cfg* options and settings are defined in this and subsequent sections. Values of their variables are described in lower case:

- LINK DRIVER token
- DMA (not applicable to token)
- FRAME token-ring
- INT 2
- MEM d800
- NODE ADDRESS 400010000BAB
- PORT A24
- PROTOCOL ipx e0 token-ring
- SLOT 3

Driver name corresponds to a particular network board or interface. Drivers such as *token.sys* and *ne2000.sys*

respectively represent IBM Token-Ring and Novell NE2000 Ethernet adapters. In contrast, *odinsup.sys* and *lansup.sys* are drivers for interfacing with higher or lower layer software. *Odinsup.sys* enables higher-layer IBM Extended Services and LAN Services to use Novell ODI drivers as a means of accessing the network adapter. In a similar manner, *lansup.sys* interfaces between the NetWare Client and low-layer drivers of IBM Extended Services that provide for adapter access. **DMA**, **INT**, **MEM**, and **PORT** are actual board settings. **NODE ADDRESS** allows the "burned-in" address of the adapter to be overridden with a user-supplied address. **SLOT** represents the location of the board in the workstation node.

For purposes of our tuning journey, **FRAME** and **PROTOCOL** are the two most important settings within the **LINK DRIVER** option. **FRAME** essentially defines a type of packet at the data-link layer. Each topology has a set of frame types. A particular protocol will utilize a particular frame type on a particular topology, thus establishing a protocol to the frame-type-to-adapter relationship.

Different packet types vary in format, typically in the data-link header. The packet-type definition represents a logical board within the contents of the physical board. Multiple logical boards can be initialized on one physical adapter board via multiple frame types. The physical board driver, such as *token.sys*, *ne2000.sys*, or a standard interface driver such as *odinsup.sys* or *lansup.sys*, must be capable of supporting the particular frame type that needs to be deployed for communication to take place. A homogeneous frame type is a necessity for two nodes to directly communicate and, even if their lower-layer topology and higher-layer protocols are the same, it is always a requirement to facilitate node-to-node interoperability across networks. Without

a homogeneous frame type, an intermediate device, such as a router or translation bridge, must be used to modify the packets when they transverse between communicating nodes.

Token-Ring frame types defined by Novell are Token-Ring and **Token-Ring_SNAP**. Token-Ring uses the IEEE 802.2 header at the data-link layer. SNAP stands for SubNetwork Attachment Point and is 802.2 with additional bytes allocated for SNAP information. IBM-PC Network follows the IBM Token-Ring pattern with an offering of **IBM-PCN2_802.2** and **IBM-PCN2_SNAP** frames.

Ethernet frame types include: **Ethernet_802.2**, **Ethernet_802.3**, **Ethernet_II**, and **Ethernet_SNAP**. **Ethernet_802.3**, sometimes called "Ethernet RAW" (IEEE parlance, meaning it does not have a standard header at the data-link layer), is the traditional NetWare frame that pre-dates acceptance of the IEEE 802.2 standard. Novell has changed the Ethernet default for SPX/IPX to 802.2 although 802.3 (RAW) is still widely used on enterprise networks. FDDI follows a pattern similar to a cross between Token-Ring and Ethernet with **FDDI (RAW)**, **FDDI_802.2**, and **FDDI_SNAP** frames.

PROTOCOL ties protocols to a

particular frame. The hexadecimal number in the sample **PROTOCOL** line is the protocol ID for the specified frame type. Multiple protocols can be used for each frame type just as multiple logical adapters (frame types) can be used for each physical board. In addition, a particular protocol may be bound to more than one frame type. SPX/IPX supports all of the frame types mentioned. It is not unusual for a protocol to be capable of supporting more than one frame type per topology. However, the practice is to configure SPX/IPX with Token-Ring frame on Token-Ring, with **Ethernet_802.3** or **Ethernet_802.2** frame type on Ethernet, and with **FDDI_802.2** on standard FDDI. TCP/IP runs the **Token-Ring_SNAP** frame type on Token-Ring, **Ethernet_II** frames on Ethernet, and **FDDI_SNAP** on FDDI. Refer to Table 1 for a list of topologies, frames, and transport protocols.

Communication buffers can be tuned for efficiency via the **LINK SUPPORT** option. For best performance, the idea is to match the size of the largest possible packet to be sent or received, and to have enough buffers to keep up with the traffic:

LINK SUPPORT

BUFFERS 40,1514

For Ethernet, we have defined 40 buffers at the optimum 1,514 byte size. An optimum configuration on Token-Ring is:

LINK SUPPORT

BUFFERS 14,4210

An upper limit of 64K bytes applies to number of buffers times the buffer size.

Protocol Parmes

The *config.sys* driver, *route.sys*, works with Token-Ring drivers and facilitates source routing across Token-Ring Medium Access Control (MAC) layer bridges. *Route.sys* enables source-routing information to be placed into the packets transmitted from the NetWare Client running on the OS/2 node.

PROTOCOL ROUTE

SOURCE ROUTE def gbr mbr
NODES n BOARD n

Def enables all-routes broadcasts rather than single routes (which is the default). By sending all routes, broadcasts increase network traffic on any network containing redundant paths. All-routes broadcasts are particularly detrimental on large networks. **Gbr** broadcasts to all destinations across all rings via all routes. **Mbr** makes the node send multicast broadcast frames as all-routes broadcasts. Some network gurus believe that Novell should not have placed these potentially detrimental options in the hands of the users at their workstations.

NODES n controls the number of entries in the OS/2 node's source-routing table, where **n** is a numeric value between eight and 255 (the default equals 16). **BOARD n** represents the logical board to which the **SOURCE ROUTE** settings apply. *Route.sys* must be loaded for each frame type initialized on every physical Token-Ring network board installed in the workstation.

Table 1: Drivers, frames, and protocols.

Topology	Frame Type	Protocol/Suite
Token-Ring	Token-Ring (802.2)	SPX/IPX, NetBEUI, LLC
	Token-Ring_SNAP	TCP/IP, AppleTalk
Ethernet	Ethernet_802.3 (RAW)	SPX/IPX
	Ethernet_802.2	SPX/IPX, LLC, NetBEUI
	Ethernet_II	TCP/IP
	Ethernet_SNAP	AppleTalk
FDDI	FDDI (RAW)	-
	FDDI_802.2	SPX/IPX, LLC, NetBEUI
	FDDI_SNAP	TCP/IP
	AppleTalk	

The most popular topologies, frame types, and protocols are listed above. The protocols per frame type are shown as they typically run on end user networks. In reality, protocols such as SPX/IPX can be bound to many different frame types. Notice that Novell's SPX/IPX and IBM's protocols (NetBEUI and LLC) utilize the IEEE 802.2 format. Asynchronous Transfer Mode (ATM) is expected to support 802.2 and SNAP for multiprotocol virtual circuits.

NDIS support on top of ODI drivers is initialized via the **PROTOCOL ODINSUP** option. In the next example, the Token-Ring driver, *token.sys*, provides the interface to the physical adapter and thereby controls transmissions on the network from the OS/2 node. Here, one adapter driver binds to **ODINSUP**; however, the upper limit is four ODI drivers:

```
PROTOCOL ODINSUP
  BIND Token 1
```

IPX is configured by the *net.cfg* section shown in the next example. The protocol can be bound to a specific network adapter driver through **BIND**. Bytes of memory are then defined for the router-memory pool, which handles network routing requests for on-going communication connections. 150 bytes should be sufficient to handle several network boards in the worksta-

tion. Three sockets are needed per connection with each file server. Additional sockets will be needed for peer-to-peer named-pipes communication. The number of sockets should not be less than 32; 128 is the maximum value:

```
PROTOCOL STACK IPX
  BIND token
  ROUTER MEM 150
  SOCKETS 128
```

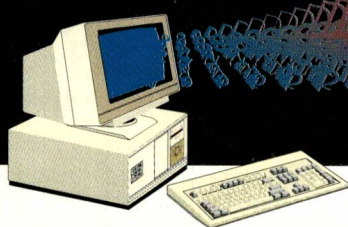
SPX settings are a bit more extensive and primarily regulate timing. For the most part, default values were used in the next example. The **VERIFY**, **LISTEN**, and **ABORT** timeout values (in milliseconds) maintain or abort **IPX** connections and **SPX** sessions via "keep connection alive" packets. If the server does not receive responses to "keep connection alive" packets sent to an idle workstation, then the server will terminate the workstation's connec-

tion. **RETRY COUNT** sets the upper limit on resends to another computer that has not responded to a request. **SEND TIMEOUT** specifies the wait time between transmissions and will need to be increased if **SPX** connection errors occur over the network. **SESSIONS** sets the node's maximum number of concurrent **SPX** sessions:

```
PROTOCOL STACK SPX
  VERIFY TIMEOUT 3000
  LISTEN TIMEOUT 6000
  ABORT TIMEOUT 30000
  RETRY COUNT 15
  SEND TIMEOUT 600
  SESSIONS 400
```

Novell NetBIOS rides above **IPX** in the protocol stack. However, it cannot communicate with IBM NetBEUI, which interfaces with LLC and which does not include **IPX** in its stack. As a result, many installations with non-standardized proto-

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col environments run Novell NetBIOS simultaneously with IBM NetBEUI on the same node. By running both protocols, the node can communicate with all variations of NetBIOS across the enterprise. For example, a Lotus Notes communication server might need to interoperate with different workgroups. Some of the workgroups might be running Novell NetBIOS while others are running NetBEUI. If the communication server is configured with dual NetBIOS/NetBEUI, it will be capable of serving and linking both workgroups within the Notes application.

The ability to run dual NetBIOS/NetBEUI stacks is a new development under OS/2 2.x and could not be facilitated under OS/2 1.3. (Refer to "Grand Pas de Deux" in the January 1992 issue of *LAN Magazine* for details.) While the dual NetBIOS/NetBEUI configuration is a technical milestone, its time has come and gone. The need to run

either NetBIOS or NetBEUI is progressively diminishing as those protocols are replaced for all practical purposes by native SPX/IPX or TCP/IP. Support of NetBIOS or NetBEUI on ever-enlarging enterprise networks frequently becomes a network engineering nightmare due to routing problems.

Timeout settings control Novell NetBIOS connections in a manner similar to that of SPX. **BROADCAST COUNT** sets the number of times NetBIOS broadcasts a query for a particular name. Internet extends the broadcasts beyond the local network and into "internet" territory. **BROADCAST DELAY** (in milliseconds) and **BROADCAST COUNT** default values double when internet is on to provide additional resilience:

```

NETWORK NETBIOS
ABORT TIMEOUT 30000
LISTEN TIMEOUT 6000
VERIFY TIMEOUT 3000

```

```

INTERNET on
BROADCAST COUNT 4
BROADCAST DELAY 2000
COMMANDS 32
SESSIONS 16
NAMES 24
RETRY COUNT 20
RETRY DELAY 500

```

COMMANDS and **SESSIONS** specify how many NetBIOS commands and sessions can be supported concurrently by the NetBIOS driver. **NAMES** sets the maximum number of name-table entries for remote workstations. **RETRY** parms establish the maximum number of retries before timeout and the delay between retries in milliseconds.

Novell Named Pipes rides the SPX connection-oriented protocol. It is an important and still widely used transport protocol in client-server computing involving OS/2 database server backends. However, like NetBIOS, Named Pipes is slowly being replaced by native SPX/IPX

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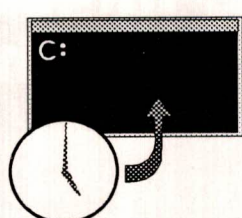
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CLIENT SESSIONS is the maximum number of client-to-server Named Pipes connections. On the other hand, the maximum number of server-to-client connections depends on **SERVER SESSIONS**. The **SERVER SESSIONS** may be as large as 1,000 but the practical upper limit advised by Novell is 400. Since Named Pipes utilizes SPX in the layer below it, SPX sessions must be greater than or equal to Named Pipes **SERVER SESSIONS**. Otherwise, Named Pipes **SERVER SESSIONS** will be limited to the number of SPX **SESSIONS**. **SERVICE THREADS** defines the number of threads a Named Pipes server can use to handle requests from all clients:

NAMED PIPES

```
CLIENT SESSIONS 16
SERVER SESSIONS 400
SERVICE THREADS 32
```

The illustrated **NAMED PIPES** lines are designed for a Named Pipes server running as an application back end.

Requester Readjustments

Requester parms are particularly relevant to performance and security between the NetWare Client and file server. **CACHE BUFFERS** are used to cache data from open files across the network. They help reduce network traffic by holding data in the OS/2 workstation's memory and thereby improve performance. The cost is workstation memory. Buffer size is automatically set to the maximum value that was negotiated between workstation and server at establishment of the communication connection. In the next example, we increased the default of eight buffers. A value of zero buffers specifies no caching.

DIRECTORY SERVICES OFF should be used if NetWare Directory Services (NDS) is not deployed. Otherwise, the workstation will waste time and packets looking for

a domain controller. Large Internet packets, (LIP) are a very important consideration in routed networks. NetWare was originally designed to default to 576 byte maximum data packets (containing 512 bytes of data) for through-router traffic. The new default in favor of large packets causes the presence of a router to be ignored during the negotiation of maximum packet size between workstation and server. Large packets mean faster performance of tasks requiring multiple reads or writes of files, and less packet traffic to trigger network bottlenecks. Large packets are enabled unless the line **LARGE INTERNET PACKETS OFF** is included in the **NETWARE REQUESTER** section of the *net.cfg* file.

NETWARE REQUESTER

```
CACHE BUFFERS 15
DIRECTORY SERVICES on
LARGE INTERNET PACKETS on
NAME CONTEXT "Bob
Panza.OS2.Miller Freeman SF"
NONDED SERVER (not applicable)
PACKET BURST on
PREFERRED SERVER
Miller_Freeman_SF1
PREFERRED TREE OS2
REQUEST RETRIES 10
SESSIONS 8
SIGNATURE LEVEL 3
```

NAME CONTEXT makes it easier for Bob to access his work in the **Miller Freeman SF** domain as defined by NDS. **NONDED SERVER** would not be used unless our node was to be both a NetWare workstation and a NetWare OS/2 file server. **PACKET BURST**, like LIP, is on by default. It is the most important parameter for increasing overall throughput across the network. Multiple IPX NetWare Core Protocol (NCP) reads and writes may be sent to and from the workstation without the "governor" limitation of a ping-pong effect. The ping-pong effect occurs when only one packet at a time is sent in each direction, causing greater wait time and more packet traffic. In simplis-

tic terms, request-reply, request-reply, request-reply, communication between two nodes is replaced by a request, reply, reply, reply, exchange.

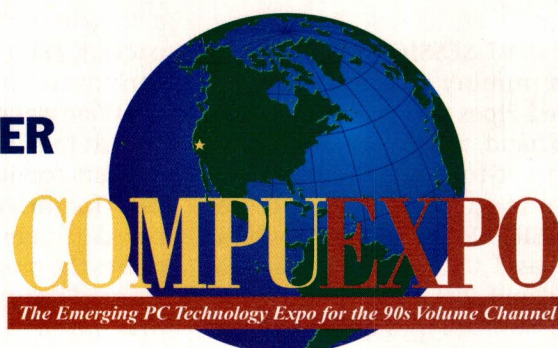
PACKET BURST is triggered upon initiation of a data operation three times the maximum packet size negotiated between the workstation and server.

PREFERRED SERVER designates a server for initial attachment by the workstation. **PREFERRED TREE** enables the workstation to connect to the *OS/2 Magazine* tree, assuming that each magazine at the Miller Freeman location in San Francisco has a separate tree. The maximum number of retries before timeout is controlled by **REQUEST RETRIES**. **SESSIONS** sets the maximum number of connections the workstation can have with all file servers.

SIGNATURE LEVEL may be used to implement a high level of security on the network via packet signature. **PACKET SIGNATURE** is designed to prevent the creation of fraudulent packet traffic to access NetWare file servers. A number ranging from zero to three regulates the packet-signature feature at the workstation as follows. With zero, the workstation does not sign packets; one (the default) causes the workstation to sign packets only if the server requests a signature; two has the workstation always signing packets if the server is capable of signing; three, the highest security level, requires the workstation to sign packets transmitted to a file server by the workstation, and also requires the server to sign packets it transmits. Under three, communication will fail unless all packets in the two-way conversation are signed.

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Mysteries of *config.sys*

An inside look at OS/2's configuration file by Rick Meigs

In the "old days" of DOS, making modifications to the *autoexec.bat* file was common, but only rarely did one have to mess with *config.sys*. So, when I first looked at OS/2's *config.sys*, I immediately closed it and said to myself, "Thank God I'll never have to touch that thing!" It was huge, with lots of new commands and unusual device drivers. Overwhelming, to say the least. Now, after using OS/2 for over two years, I've found I rarely do anything with *autoexec.bat*, but *config.sys* has become extremely important.

A few words of caution. First, before you ever edit *config.sys*, make a backup copy. At the end of this article I describe how to use this backup to recover from a bad *config.sys*. Second, use OS/2's System Editor with word wrap off to do your editing. My recommendation is that you don't use the Enhanced Editor. Always save *config.sys* as a "plain text" file.

Unlike the DOS *config.sys*, which is read sequentially, OS/2 reads the entire file before it invokes the commands listed. Therefore, except for a few exceptions, it generally doesn't matter where a command is placed. The file specifies all necessary device drivers, sets up disk caches, sets environmental variables like the Prompt and PATH statements, tells OS/2 which command-line processor to invoke and objects to start at boot. It also tells the system which language alphabet to use and much more. For example,

```
SET COMSPEC=C:\OS2\CMD.EXE
```

and

```
SET OS2_SHELL=C:\OS2\CMD.EXE
```

tell the OS/2 which command-line processor to use. The default, as shown in these two lines, is *cmd.exe*. The DOS equivalent is *command.com*. If you want to run some other command-line processor, such as the shareware 4OS2, change these two lines by substituting the appropriate *.exe* file for *cmd.exe*.

Cache size

OS/2 needs a lot of RAM and you don't want to starve it. An excessively large cache can have a negative impact on your overall system performance by reducing available RAM needed for the operating system and for your programs.

You set cache size in two places within the *config.sys* file. The first is for the High Performance File System (HPFS) and is controlled from within the *IFS=C:\OS2\HPFS.IFS* line. The */CACHE:nnn* switch sets up the HPFS disk cache and its size. During installation, OS/2 will set this to a default based upon the total RAM available in your system. If you omitted this switch, the default would be 10% of the available RAM. The maximum cache size for HPFS is 2MB (2,048 KB).

The other cache is for FAT partitions and is controlled by the *DISKCACHE* statement. As with the HPFS cache, OS/2 will set this to a default based upon the total RAM available in your system. Maximum FAT cache size is 14MB. The folks at Proportional Software have provided the cache-setting information in Table 1 based upon a great deal of OS/2 system tweaking done by their DCF/2 development team. You can get their complete report by downloading the public domain file *cache.zip* from your favorite OS/2 BBS. For the purposes of Table 1, "active" and passive are descriptors for the way a partition is used. If it is sel-

dom used, it is passive. If a lot of disk-intensive I/O occurs on the partition, it is active.

The HPFS cache can also be further modified using *cache.exe*. You use the program by running it from within *config.sys*. Here's the line that appears in my *config.sys* file:

```
RUN=C:\OS2\CACHE.EXE
/MAXAGE:7500 /DISKIDLE:60000
/BUFFERIDLE:60000
```

There are at least four possible switches for *cache.exe*:

- **/LAZY** determines if lazy writes are on or off, that is, whether the contents of the cache will be written to your hard disk immediately (**/LAZY:OFF**) or when your hard disk is idle (**/LAZY:ON**). The default is on.
- **/MAXAGE** sets how long data waits in the cache before it is moved to another area of the cache where less-used information is stored, or how long data waits in the cache before it is written to the hard disk. The default is 5,000 milliseconds or about five seconds.
- **/DISKIDLE** sets the amount of time your hard disk must be idle before it will accept data from the

cache. The default is 1,000 milliseconds or about one second.

- **/BUFFERIDLE** sets how long the cache buffer must be idle before its contents *must* be written to your hard disk. The default is 500 milliseconds or about ½ second.

OS/2 contains a bug that causes the **CACHE** statement to ignore all other switches that follow when you include the **/LAZY** switch. Therefore, if you want to turn lazy writes off and also change other cache parameters, you will need two **RUN** statements. To further compound this situation, OS/2 2.1 contains another bug: You can't turn lazy writes off from the *config.sys* file. The Workplace Shell always turns lazy writes on when it loads regardless of what your *cache.exe* command sets. So, if you want the lazy writes off, you will need to run the **CACHE** command *after* the Workplace Shell starts. You can do this by writing a *.cmd* file and placing it in your Startup folder.

According to one source at IBM, two other undocumented parameters exist. **/DIRTYMAX** sets the threshold number of dirty buffers before immediately flushing of Least Recently Used (LRU) data

blocks is needed. **/WRITECACHE** sets the threshold number of bytes that HPFS will cache for a lazy write. If you want to check to see what your current HPFS cache parameters are, go to an OS/2 command prompt, key in the word **CACHE** and press <Enter>.

If you have a CD-ROM, you can also set a cache for it by setting the proper parameters on the **IFS=C:\OS2\CDFS.IFS** line. The **/C:n** parameter sets the size of the cache, where **n** refers to the number of 64k segments for the cache (not the absolute byte count). For example **/C:4** would set a 256K cache (4 x 64=256k).

No Shell

Under OS/2, you don't have to run with the graphical Workplace Shell. Without the Workplace Shell, you will not be able to run any Presentation Manager (PM) specific programs such as the System Editor or the applets that come with OS/2. You will also lose the Workplace Shell's powerful drag-and-drop capability and other functionality. That being said, OS/2 without the Workplace Shell is still a very powerful 32-bit operating system.

To run OS/2 with only a command line interface, change the **RUNWORKPLACE** line to read:

```
SET RUNWORKPLACE=C:\OS2\CMD.EXE
```

This statement brings OS/2 up without the Workplace Shell and gives you one screen session. You can start other sessions using the **START** or **DETACH** command. Otherwise, operate just like you would in DOS. If you've started more than one session, switch between them using <Alt+Esc>. For those who want the power of OS/2 and like to work only from a command line, give this method a try. It is also a way to improve performance on systems with less than 8MB of RAM, since the Workplace Shell takes up a lot of RAM.

Table 1: Sample cache settings.

CASE 1: You use only HPFS or only FAT, but not both.

	HPFS only Set CACHE to	FAT only Set DISKCACHE to
System memory of at least		
16MB	2,048	2,048
12MB	1,536	1,536
8MB	1,024	1,024

CASE 2: You use both HPFS and FAT with HPFS active and FAT passive.

	Set CACHE to	Set DISKCACHE to:
System memory of at least		
16MB	2,048	512 - 1,024
12MB	1,536	256 - 512
8MB	1,024	128 - 256

CASE 3: You use both HPFS and FAT with HPFS passive and FAT active.

	Set CACHE to	Set DISKCACHE to
System memory of at least		
16MB	1,024	2,048
12MB	768	1,536
8MB	512	1,024

Directory Order

SET DIRCMD is a handy but undocumented *config.sys* command. Since DOS 5, you can tell DIR how to present file information. In OS/2, use the DIRCMD command. For example: SET DIRCMD=/ON /P tells OS/2 to display the DIR information in alphabetical order and place a pause at the end of each page. /A list files with specific attributes. /AH lists only hidden files. Other options are S A and R. If you place a minus sign in front of your specified attribute, all files will list except those with the attribute specified. For example, /A-H-S will display all files except hidden and system files. /B lists directories and files without heading and summary information. /F lists files with the full drive and path information. Date, time, and size are omitted. /L displays information in lowercase. /N lists files on a FAT drive in the

same format used for an HPFS drive—date, time, size, and name. /O lists files according to the specified sort option. Sort options are as follows:

- G = display directories first.
- N = alphabetize by file name.
- -N = reverse-alphabetizes by name.
- E = alphabetize by extension.
- -E = reverse-alphabetizes by extension.
- D = by date, oldest first.
- -D = by date, newest first.
- S = by file size, smallest first.
- -S = by file size, largest first.
- /P pauses after a full screen of files is listed.
- /R displays long file names if applicable.
- /S searches and displays all directories.
- /W displays file names across the screen. Date, time and size are omitted.

Startup Objects

Those with a Windows background know how useful the Startup Program Group is. You place the icon of a program in this group and the program associated with that icon will start up when you load Windows. OS/2 also has a Startup folder that performs the same function. Unlike Windows, OS/2 also remembers which programs you had open when you shut down. So, the next time you turn on your computer, OS/2 opens those programs so you can continue to work where you left off.

Now, let's say you always want your word processor to start when you boot OS/2, so you have its icon in your Startup folder, but one day you don't need it right away, so you close the program. Later, you open it using its the Desktop icon. When you finish for that computing session, you leave your word processor open as usual and shut down the

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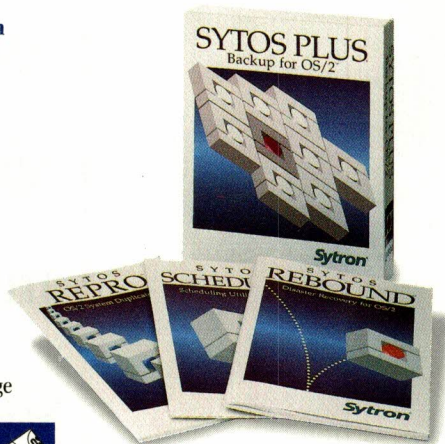
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system. What will happen the next time you boot your system? OS/2 will start your word processor twice, once because it is in the Startup folder and once because you left it open at shut down.

There is one other time when it is important not to have a program restart when you boot your system. That's when an ill-behaved program locks it up. If you must turn off your system or do a <Ctrl+Alt+Del> to clear up the problem, OS/2 is going to remember that this ill-behaved program was open and it will attempt to restart it, potentially locking up your system again.

You can keep these types of situations from happening by using the **SET RESTARTOBJECT=** command. This command tells OS/2 what applications to start after you suspend operations with or without doing a shut down. If this statement is not in your *config.sys*, then the default is yes—start all objects that were running at the time of shut down or reboot. The other options are no, do not start any applications that were running at time of shutdown or reboot. The parameter you would use to overcome these two situations is **STARTUPFOLDERONLY**, which will only start objects that are in the Startup folder.

REBOOTONLY will start objects only if the OS/2 Workplace Shell is starting from a reboot (<Ctrl+Alt+Del>) or at power on. Objects will not restart if the WpS is restarted as a result of its own error-correction recycling.

We have one other option within OS/2 to circumvent the auto-starting of an ill-behaved program. Hold down <LeftCtrl+LeftShift+F1> (all at the same time) during boot. It must be done *after* your mouse pointer or clock is displayed, but before any icons appear. If you hold down these three keys and all disk activity stops, you pressed them too soon. Just release them for a second

and press them again.

Take it Off

The OS/2 Installation program doesn't always do a good job of understanding your system's true configuration. Therefore, your *config.sys* file can contain commands you don't need. These needless commands load device-driver or other programs that take valuable RAM from your operating system. Here are a few tuning tips you might want to review and implement.

If you're not using OS/2's HPFS for any of your hard drive partitions, **REM** out the first line of your *config.sys*. It will read something like:

```
IFS=C:\OS2\HPFS.IFS /CACHE:512  
/CRECL:4 /AUTOCHECK:CD
```

If you're not using any FAT partitions on your hard drive, then **REM** the **DISKCACHE** line. Of course if you have both HPFS and FAT partitions, you will need both of these lines. If you do not plan to use the applet PM Terminal, **REM** the line

```
DEVICE=C:\OS2\APPS\SASYNCD.A.SYS
```

You may be able to improve printing speed by increasing your print buffer. Print buffers are established by the **PRINTMONBUFSIZE** command. The syntax is **PRINTMONBUFSIZE=LPT1, LPT2, LPT3** where **LPT1** is the buffer size for the parallel port **LPT1**, **LPT2** is the buffer size for **LPT2** and **LPT3** is the buffer size for **LPT3**. The default and minimum is 134 bytes and the maximum is 2,048 bytes. You must have a buffer defined for **LPT2** and **LPT3** even if you don't use these ports. You will get an error message at start-up if you don't. I have my **LPT1** buffer set at 402.

If you rarely work from the command line, change the **SET KEYS=ON** line to **SET KEYS=OFF**. When using the command line, **KEYS** tells *cmd.exe* whether to remember pre-

vious keystrokes so they can be recalled with the up arrow key. OS/2 maintains a 64k buffer for storing keystroke history and, if you don't need this feature, getting that 64k back can help performance.

If you don't have OS/2 installed on a laptop computer, then you probably will not be using OS/2's Advanced Power Management system. **REM** the line **DEVICE=C:\OS2\APM.SYS**.

The same goes for **DEVICE=C:\OS2\PCMCIA.SYS** and **DEVICE=C:\OS2\MDOS\VPCMCIA.SYS**. These two drivers are new to OS/2 2.1. They provide support for computers that have PC Memory Card International Association (PCMCIA) adapters. **REM** these two lines if you don't have any PCMCIA devices. If you don't have a CD-ROM installed, **REM** the line **DEVICE=C:\OS2\MDOS\VCDROM.SYS**.

Keep Control

Many DOS and Windows programs want you to modify your *config.sys* file when they install. The program's installation process assumes you are running DOS and any changes would be appropriate for that operating system, but they may not be for OS/2. For example. **PATH** updates will be made to the *autoexec.bat* in DOS, but should be made to the OS/2 *config.sys*. If well written, the installation program will ask before it makes any changes. Should you let it make the modifications?

Here's how I approach the issue. I never allow any changes unless I have a current backup of copy of my *config.sys* file. If the program's documentation clearly indicates what changes need to be made, I do them myself after a review. As an example, when I recently installed a sound card, the installation program asked to install two drivers that were not necessary because the same processes were handled by

OS/2's Multimedia Presentation Manager/2 (MMPM/2) extension.

If the program's documentation is not clear on what changes are to be made, I usually let the installation process make the modifications. That's the only way to really know what it added. Then, I simply compare my backup *config.sys* file with the newly modified one to locate any changes and then adjust them accordingly. This approach also applies to my *autoexec.bat* file.

Safe Changes

Note that there are a couple of *config.sys* commands you don't want to mess with unless you have a very specific need to do so. They are:

```
SET AUTOSTART=PROGRAMS,TASKLIST,
    FOLDERS;
PRIORITY=DYNAMIC;
DEVICE=C:\OS2\TESTCFG.SYS;
```

and

```
DEVICE=C:\OS2\PMDD.SYS
```

Before you ever begin editing *config.sys*, make a backup copy and save it to your root directory! Do not save it to your OS/2 Installation disk. The *config.sys* on this disk should never be modified.

If your *config.sys* will not load, you have several options. To restore *config.sys* from a backup copy, first boot OS/2 from the OS/2 Installation Disk. Insert OS/2 Disk #1 when asked. When the first text screen appears, press the <Esc> key. This will put you into OS/2's command-line mode. Assuming that your backup copy of *config.sys* is named *config.sav* and is in your root directory, enter the following command:

```
COPY C:\CONFIG.SAV C:\CONFIG.SYS
```

and press <Enter>. After the file has been copied, remove OS/2 Disk #1 and reboot your system. What if you didn't make a backup copy? You're still in luck because IBM thought about you. When OS/2 was first installed on your system, the installation program made a backup copy of your original *config.sys* in the *c:\os2\install* directory. To restore from this file, follow the same steps as for using a backup copy, except enter the following copy command instead of the one shown:

```
COPY C:\OS2\INSTALL\CONFIG.SYS
C:\CONFIG.SYS
```

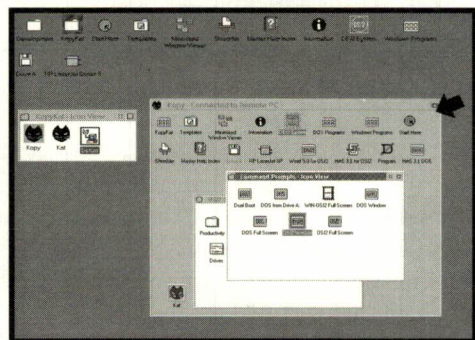
and press <Enter>. After the file has been copied, remove OS/2 Disk #1 and reboot your system.

Rick Meigs is the President and CEO of Pacific Northwest Trust Company. He can be reached via Internet as rick.meigs@nwcs.org.

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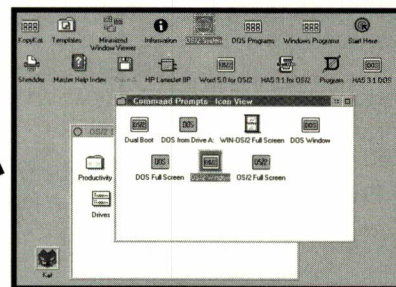
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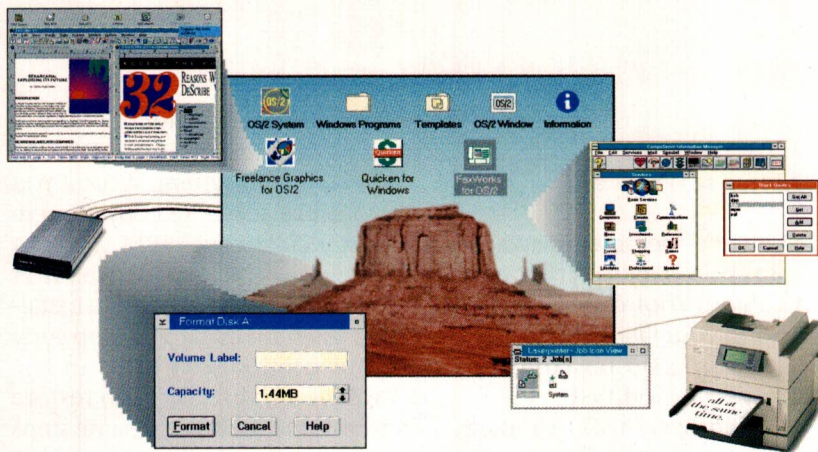


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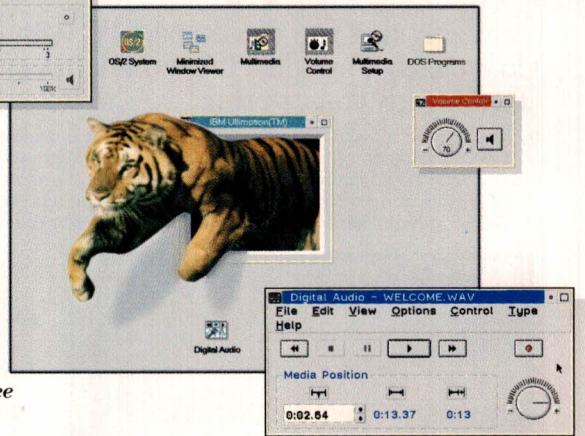
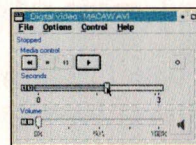


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Safety in Numbers

Your local user group can be your most valuable OS/2 resource

By Esther Schindler

Computer user groups are all-volunteer organizations of users helping users, people who get together to talk about computers. They are grass-roots organizations at the most basic level.

Many people envision user group members as hopeless dweebs. User group members, they suspect, are all overweight guys, three days overdue for a shower, who have an unwholesome relationship with their computer and no relationship whatsoever with women.

Thankfully, that image is not correct. Oh, occasionally, a socially inept guy will show up to get into a hot-and-heavy debate about IRQ settings, but most user group members are ordinary people. By day, they are white-collar professionals, retirees, computer consultants, or small-business owners. By night, they have real lives that include bowling or parent-teacher organizations. Statistically, they have a high mean income and a lot of computer purchasing power, which doesn't fit the image of a bunch of guys whose shirts are perpetually untucked.

Why Should I Join?

People who are involved in user groups share an enthusiasm for computers. For a small membership fee (between \$15 and \$45 annually), you get a variety of services, often including meetings, a newsletter, a BBS, product discounts, and training classes. Perhaps most

As a user group member, you can get the straight dope from real users with real-world experience. Most of the people you will meet have no company bias and no corporate image to uphold

importantly, you can interact with a community of computer users from all walks of life.

As a group member, you can get the straight dope from real users with real-world experience. Most of the people you will meet have no company bias, no corporate image to uphold. They will tell you if you're using the wrong tool for the job, if your problem is from a known bug, or if the best answer is "Use something else." If a product stinks, user group members will say so. If there's a great new OS/2 utility available, you'll hear about it first from another member.

Accessing User Group Services

Most groups have a monthly general meeting, where vendors give product demonstrations. Some groups are large enough that computer company CEOs are frequent speakers; other groups are so tiny that members do "show and tell" about favorite products. During a question-and-answer session, you can ask tough questions to find out whether (and how) the application being demonstrated solves your problems. You can give feedback to software and hardware vendors, too. If half the audience asks for a feature, it's a sure thing that the vendor will take notice.

Don't be intimidated by attending a user group meeting if you aren't technically inclined, or if you're new to computing. Most user groups devote some meeting time to novice computer users, usually as a

"beginner's session" at the start of the general meeting.

The best part of any meeting is unstructured conversation with other users. You may discover that the person sitting behind you is a specialist in telecommunications, and she just happens to know the answer to your nasty modem problem. Or, a retired guy asks which OS/2 word processor to buy, and you find that your recent research helps him a lot.

Almost every user group publishes a monthly newsletter. Some OS/2 user groups distribute the newsletter on disk as an OS/2 .inf file; most use a magazine format.

Newsletters contain reviews, tips, and club news.

Many user groups sponsor special-interest groups (SIGs). It's impossible to serve everyone's needs in 12 general meetings a year, so SIGs give people the opportunity to share information about their chosen topic. In the Phoenix PC User Group, we have about 20 SIGs, on topics including OS/2 (naturally, our most popular SIG!), Home Users, Telecommunications, and Programming.

Chances are, the user group also sponsors an electronic bulletin-board system (BBS). The BBS is a great way to keep in touch with

other users, exchange technical information, and find the latest shareware and freeware programs. Post a message to ask if OS/2 supports DOS SHARE, or advertise that old 2,400-bps modem, or to let people know about a cool shareware utility you just uploaded.

Another great benefit is that as a user-group member, you are sometimes eligible for product discounts. Sometimes the discounts can pay for the cost of membership. At a recent meeting, one vendor offered his product at more than 50% off the list price. Some vendors (including *OS/2 Magazine*) also offer standing discounts for books, prod-

Starting an OS/2 User Group

You're hyped up, you're excited about user groups... and you're alone. You've looked everywhere for a local user group, but you can't find any. (You're probably in Montana. For reasons I've never been able to fathom, I've never even heard of a user group in Montana.) Maybe you should start a group of your own. Starting a user group sounds like fun. It is fun. It's also a lot of work. You need three things:

- Members to show up and talk or look at something.
- Someone to show off something (usually a product).
- A cache of volunteers, willing to take on the logistics.

Most people who start user groups consider only the first two items. But keep in mind that running a user group is a business, albeit a non-profit one. Are you ready to take on both the technical end of running a group—the part where you get up in front of the room and crack jokes—and the administrative end? Have you thought about bank accounts and newsletter editors and finding volunteers to clean up the popcorn? What about bylaws and establishing a non-profit tax status? How do you plan to market or advertise the group? The more business-like and smoothly the group runs, the more fun you can have—because you won't hear as many complaints. But those details simply have to be taken care of, or the user group will die within six months. I've seen it happen several times.

Start A SIG Instead?

If there's an existing user group nearby, which simply lacks OS/2-specific support, consider starting an OS/2 Special Interest Group within their auspices. That gives you the resources of a big group (such as the newsletter) but usually gives you a lot of freedom. As a SIG, you can use the user group's offices, mailing list, newsletter facilities, tax status, and so on. You won't need officers (though you do need a coordinator or leader), and you have the benefit of the existing user group's officers' experience. The OS/2 SIG of the Phoenix PC User Group remains a SIG for just these reasons.

Whether you start a SIG or a stand-alone group, remember that it's a lot

of work without any financial remuneration. Oh, if you work on the Greed basis, you'll see the obvious opportunity for "bragging rights"—it sure doesn't look bad, in my bio, that I've been a user group officer for seven years. Running a user group puts you at the front of the room, and it gives you a lot of visibility in the business community. You can get to know some of the computer industry big-shots rather well, too, and if you write well you could find yourself writing for national magazines (who *me?*).

But all that is poor recompense when you realize that the newsletter is due tomorrow, three of your writers haven't met their deadline, and your spouse has resorted to sending you email to tell you that it's dinner time. The time you invest in the user group is time taken away from your family and from your real work. It can be worth it—clearly, it has been for me—but it does require an emotional investment.

Finding User Group Resources

When you start an OS/2 user group, make sure you contact the user-group folks at IBM. Send them a note telling them who you are and what you're up to. IBM does a good job supporting user groups; they can send you a user group 'How-to' guide with some very helpful information, and they send "goodie boxes" every so often.

I highly recommend that the user group join the Association of PC User Groups. The dues are \$25 a year, and membership provides several benefits. There's a quarterly newsletter for user group officers, a free BBS (where you can leave notes like, "How do I get people who take review software to actually write the review?") and user group officer regional gatherings. For instance, the two days before Fall Comdex in Las Vegas, officers from about 150 groups discussed topics like Choosing a Program, Making Presentations, and Managing Volunteers. As a new user group officer, this kind of help is priceless. (IBM sponsored those activities.)

If you're starting a user group, contact OS/2 product vendors. Many of them will be interested in presenting their product to your user group. Most software developers recognize the value of reaching those "real users," after all, so the relationship between user groups and vendors is win-win.

ucts, and services.

Getting Technical Support

User groups are a great place to find technical support. Another member may have solved a similar problem recently, and knows a specific solution. Even if nobody has an answer, other members will often help with several useful suggestions. Some user group newsletters list phone numbers of volunteers who can help on given topics: call Barry for spreadsheet help, call Carol if you have programming questions, and so on.

Of course, user groups can't solve every problem. You are completely at the mercy of finding someone with a similar experience. If no one else in the group uses the same database that you do, it won't be easy to get help on using the report-writer. However, people are always willing to *try* to help you—which is more than you can say

about some company tech-support representatives.

Because technical people, especially active ones like user-group members, are opinionated, you will probably receive not just one, but an abundance of answers to your questions. You have to use your own judgment to separate the good suggestions from the useless ones.

Getting The Most From A User Group

There might be enough information in this article to encourage you to attend a user group meeting. But there may not be enough reasons, so far, to convince you to get *involved* in a group.

Yes, you can get a lot from a user group even as a wallflower. The meetings provide plenty of useful technical information even if you never say a word. And as long as you get a door prize ticket in the bucket, you could always win

something. However, if you attend a meeting and you didn't learn something *and* teach something, then you missed more than half the experience. What you get out of a user group is proportional to what you put in. The real joy is in sharing knowledge, not in simply attending a meeting and staring at the presenter like a baby bird waiting to be fed.

Nearly every user group is run wholly by volunteer effort. Every group has officers, but the group's activities are directly related to the efforts of the membership, not the "leaders." If a user group member helps you, thank him. When you get assistance, remember to return the favor. Be there to help the next person. When you've tracked down the solution to a difficult problem, write a short article for the newsletter, to save someone else the effort you went through.

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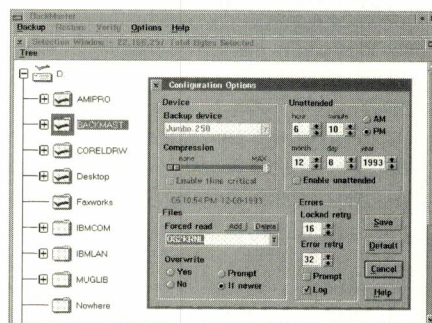
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Requires OS/2 2.1 and 8MB of memory

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P.O. Box 632070 Nacogdoches, TX 75963
Voice: (409) 564-1862 FAX: (409) 560-5868
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groups are a great place to demonstrate OS/2 to other people (new people are always showing up, testing the water), and to show off what the operating system is capable of. If you sincerely want to help others, you'll always find plenty of opportunities to do so. You'll make a clear difference in people's lives. There's nothing as heartwarming as the delight on the face of someone whose hard disk you just saved.

What? The warm-and-fuzzy approach doesn't appeal to you? Okay, let's proceed directly to something you might understand better: Greed.

Remember those nifty statistics I referred to? User group members are usually professionals who use computers on a daily basis. If you're a computer consultant, an insurance salesman, or anyone with a message to sell, your ears probably just perked up. Well, perk them back down.

People attend user group meetings to learn about computers and to share experiences. They may be happy to learn that you provide the very best database consulting in town, but learning about that fact is not why they—or you—are there. You can do some outstanding business networking at a user group meeting, but if you show up with a pile of business cards, people will treat you like they treat door-to-door salesmen. Don't do it.

If you're a computer professional, the best way that you can "advertise" is to demonstrate your competence. Help others. Put an ad in the group newsletter to let people know what you do for a living, but always be willing to "be there" for people. Answer questions on the BBS. Run a SIG on the topic of your specialty. When people need help with databases, they'll remember that you were the nice, helpful person who seemed to know every-

thing about the topic. And they'll call you. It's a great way to gain visibility while doing useful work.

If you're the ambitious sort, user groups are a good place to hone your skills. Where else can you get articles published so easily? How many other opportunities do you have to learn how to make a technical presentation to a group without feeling that, if you screw up, you'll lose your job? How else can you learn how to manage people? User groups give you the opportunity to try out skills safely. As a user-group officer, I began by making nervous presentations to 30 people in a high-school classroom. I'm now comfortable telling sick jokes to audiences of 500 or more. This, too, can happen to you.

How to Find a User Group

It's easy to find a user group. Some magazines (notably *Computer Shopper*) provide a monthly listing

Coming in December from the publishers of *OS/2 Developer/Software Development/LAN Magazine/DBMS/Database Programming & Design/Dr. Dobb's Journal/UNIX Review* and IBM Corp.!

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Signature (REQUIRED) _____

MAIL TO: Daniel Strickland, OS/2 APPLICATIONS DIRECTORY,
 Directory Dept., Miller Freeman Inc., 600 Harrison Street, San Francisco, CA 94107 USA
 FAX TO: (415) 905-2239 OR CALL: (415) 905-2728

of groups. CompuServe provides a section devoted to user groups in its OS2USER forum and a file in its library lists the known groups. If you can't find a listing for a group near you, post a message. Look in the "meetings" section of your business paper, search for mention on local BBSs, and ask at computer stores. *OS/2 Magazine* recently printed a listing of U.S. OS/2 user groups (Information Center, by Dick Conklin, March 1994, pp. 77-81).

Another way to find a user group is through the free dial-up User Group Locator Service. The User Group Locator, at (914) 876-6678, is sponsored by the Association of Personal Computer Users Groups (APCUG). APCUG is an international consortium of user groups, with the mission of "user groups helping user groups." It has over 350 members, from Australia to Moscow to Tulsa, Oklahoma.

APCUG encourages, promotes,

and enables communication and the exchange of information among personal-computer user groups. It assists user groups in the fulfillment of their educational and charitable missions and other activities that support those missions; it promotes the awareness of the value of user groups to the community and the computer industry; and it facilitates communication among user groups, the community, and the computer industry.

User group activities help you to learn about new products and to get the most out of what you own. Check out the group near you!

Esther Schindler is a computer consultant and author. She is vice-president of the Phoenix PC Users Group, and co-coordinator of its OS/2 SIG. Esther was a member of the Board of User Group Advisors for the Association of PC User Groups and a founder of two small groups in rural Maine. She has

been a user group officer for seven years. During her vice-presidency, the Phoenix PC User Group has grown from 650 to nearly 1,000 members. She can be reached on CompuServe at 72241,1417.

RESOURCES:

Association of Personal Computer Users Groups

1730 M Street, NW, Suite 700
Washington, DC 20036
User Group Locator: (914) 876-6678
MCI:apcug
Internet: apcug@mcimail.com

IBM PSP User Group Relations

Kathy Fanning or Gene Barlow
11400 Burnet Rd., M/S 2996
Austin, TX 78758
Fax: (512)823-3252, attention Kathy Fanning
Internet: ibmpcug@vnet.ibm.com

Phoenix PC Users Group

P.O. Box 35637
Phoenix, AZ 85069-5637
(602) 222-8511

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Flowcharts can be printed out on laser and color printers or on large industrial plotters such as the HP Designjet 6000. Printouts can be set to print out on one page or scaled up to 25 times their original size. With PowerMap you get more than just a flowchart. You can print time and costs analysis reports that provide you with the details behind each process activity.

For pricing inquiries and a list of client/server consultant services contact:

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MicroGate offers two high-performance, low-cost IBM® compatible SDLC adapters for use with OS/2 Communications Manager/2. Available in ISA and MCA versions, MicroGate SDLC adapters feature a 16550 buffered UART for async communications and selectable SDLC IRQs.

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Database Management Software

Finding the ideal DBMS BY ANNALISA CHAMBERLAIN AND DAVE STODDER

Welcome to *OS/2 Magazine's* buyer's guide to database management software. Our goal, in assembling this guide, was to include information about database management systems (DBMSs) that are centered on the OS/2 workstation as both a database server and as a client. On the other hand, an incredible amount of software is available to database managers, including applications, development tools, and utilities. So, to make this buyer's guide as useful as possible, we've limited inclusion to software in a few major categories.

Before we leap ahead, please note that categorizing software is difficult, even among DBMSs. At one time, "platform" was the easiest distinction; however, many of today's DBMS products have been ported to platforms up and down the scale—and the platforms themselves are now capable of handling a greater variety of purposes: client, middleware, server,

or host. With that in mind, the categories we've chosen are:

- Client/Server databases for OS/2 (Table 1) lists server and host databases that support OS/2. We've tried to choose features essential to these products' roles as managers of sharable, programmable, recoverable, and accessible data resources.
- Microcomputer DBMS products are integrated database and development tools running on the OS/2 platform. They tend to run on stand-alone machines, though many are becoming network aware.
- Object DBMS products are microcomputer DBMS products that address traditional DBMS needs from an object-oriented perspective.
- Integrated Computer-Aided Software Engineering (CASE) tools serve both systems development and data management. Historically, CASE tools bit off more than they could chew and

nearly expired under the weight of their own marketing hype. Today's CASE tools seem smarter, more tuned to the task at hand, and better.

- Applications Generators, in the form of fourth-generation languages (4GLs) are one of the hottest software categories available to IS. They free developers from COBOL (or "3GL") coding and, with their DBMS functionality, many combine development and data management features.

Information about the products in this Database Buyer's Guide was provided by the vendors; we've worked hard to boil down the hype and ferret out inconsistencies. Use this guide to get off to a good start in your search for the ideal DBMS.

David Stodder is the Editor, and Annalisa Chamberlain is the Managing Editor, of Database Programming & Design, published monthly by Miller Freeman Inc.

MICROCOMPUTER DBMS

Advanced Revelation

Revelation Technologies
(800) 262-4747; (203) 973-1000
Fax: (203) 975-8744

Current release number: 3.1

Primary user: applications developer

Operating system(s): DOS v. 3.1 or later, OS/2 v. 2.0 or later

Works in multiuser, network configuration? yes

Database model(s) supported: relational, variable-

length, multivalued file/record structure

Price range and licensing: \$1,195 for single user full development copy; \$995 for five-user LANpack; \$795 three-user LANpack (unlimited); \$4,995 256-user LANpack

Description: Advanced Revelation, designed for PCs and LANs, provides critical building blocks that ensure flexibility in applications development and robust, multiuser data access. Advanced Revelation is programmable and scalable to handle demanding

applications-development needs. Features include rapid application generator, active data dictionary, ANSI SQL-compatible development and programming tools, and intelligent gateway technology that simultaneously accesses diverse data formats (DB2, dBASE, SQL Server, Oracle Server, NetWare SQL, Lotus 1-2-3). Advanced Revelation runs on any 80286-based PC or compatible with DOS and can be used in leading LAN environments.

READER SERVICE NO. 155

Buyer's Guide

Alpha Four

Alpha Software

(800) 852-5750, ext. 117; (617) 229-2924

Fax: (617) 272-4876

Current release number: 3.0

Primary user: end user, applications developer

Operating system(s): DOS, OS/2

Works in multiuser, network configuration? yes

Database model(s) supported: relational

Price range and licensing: \$495 (single user)

Description: Alpha Four is a relational, networkable database for nonprogrammers. Users can create applications with scrollable regions, cascading and conditional look-up tables, real-time posting, multifile data entry, referential integrity, and mouse support. Users can access up to 10 databases at one time, produce WYSIWYG reports, and call other DOS and spreadsheet programs from within Alpha Four to perform such tasks as form letters, mailing labels, and automatic dialing.

READER SERVICE NO. 156

DataFlex Corp.

Data Access

(800) 451-3539; (305) 238-0012

Fax: (305) 238-0017

Current release number: 3.01

Primary user: applications developer

Operating system(s): DOS, DOS LAN, Windows, Unix, OS/2

Works in multiuser, network configuration? yes

Database model(s) supported: relational, network

Price range and licensing: \$795 and up

Description: DataFlex is an applications-development environment with all tools in a single, integrated package. DataFlex combines a flexible, full-featured object-oriented 4GL, a WYSIWYG application generator, an RDBMS, and a set of built-in productivity tools and utilities. The combination makes creating applications easier, faster, and more economical than ever before. DataFlex is portable. Versions are available for DOS, DOS LANs, Microsoft Windows, AIX, Unix Systems, and OS/2. Over 300,000 licenses of Data Access Corp.'s DataFlex software are in use by systems houses, applications developers, and business, corporate, and institutional users worldwide.

READER SERVICE NO. 157

DataEase

DataEase Int'l

(800) 243-5123; (203) 374-8000

Fax: (203) 365-2317

Current release number: 4.53

Primary user: end user

Operating system(s): DOS, OS/2, Windows, Citrix, Desqview

Works in multiuser, network configuration? yes

Database model(s) supported: relational

Price range and licensing: \$795 and up; various site license options

Description: DataEase is a character-based, relational database applications-development system and for single-user, file-server, and client/server environments. It runs on DOS, OS/2, and Windows (386 Enhanced Mode) operating environments. DataEase's intuitive menu system and query-by-example (QBE) reporting enables novice users to build, maintain, and run database applications, while expert users can quickly build sophisticated applications using the power of DataEase's 4GL, the DataEase Query Language. Professional developers can also directly reference 3GL subroutines written in C and Assembler from within DataEase applications through Custom Defined Functions (CDFs). DataEase's selective use of object-oriented techniques replaces hundreds of lines of code with a few keystrokes.

READER SERVICE NO. 158

Raima Database Manager

Raima Corp.

(800) 327-2462; (206) 557-0200

Fax: (206) 557-5200

Current release number: 3.3

Primary user: applications developer

Operating system(s): DOS, Windows, OS/2, Unix System V and Berkeley 4.2, AIX, Sun OS, SCO, QNX, VMS, Windows NT, Xenix, and Ultrix

Works in multiuser, network configuration? yes

Database model(s) supported: relational, hierarchical, network

Price range and licensing: contact vendor

Description: Raima Database Manager, formerly db_Vista, is the industry's leading embedded database engine for C programmers. RDM consists of a powerful low-level API, a report writer, and a data-

base revision tool. RDM has been embedded in thousands of commercial applications and system software products, is sold with royalty free runtime, and source code is available.

READER SERVICE NO. 159

R:BASE

Microrim

(800) 628-6990; (206) 649-9500

Fax: (206) 649-2785

Current release number: 4.5 Plus!

Primary user: end user, applications developer

Operating system(s): DOS, OS/2, CTOS

Works in multiuser, network configuration? yes

Database model(s) supported: relational

Price range and licensing: \$795 for single user, \$995 for multiuser

Description: R:BASE 4.5 Plus for OS/2 is a true 32-bit relational database management system designed to take advantage of OS/2's 32-bit architecture and multitasking environment. R:BASE features embedded ANSI level 2 SQL combined with query-by-example for improved data integrity and ease of use. In addition to recent enhancements including a revamped database structure and a new query optimizer, R:BASE has implemented performance improvements for vastly superior processing speed.

READER SERVICE NO. 160

XDB-SQL RDBMS

XDB Systems

(301) 317-6800

Fax: (301) 317-7701

Current release number: version 3.0 (1993)

Primary user: end user, applications developer

Operating system(s): DOS, Windows, OS/2

Works in multiuser, network configuration? yes

Database model(s) supported: relational

Price range and licensing: contact vendor

Description: XDB-SQL RDBMS is a high performance SQL database engine for the Windows, OS/2, and DOS operating environments. XDB's SQL engine provides referential integrity, distributed database access, transaction processing, backup and recovery, authorization, concurrency control, and a system catalog. XDB's DB2-compatible engine, and a suite of database development and

Buyer's Guide

administration tools including interactive SQL, database create/alter, data-entry,, import and export utilities and DCLGEN. XDB-SQL RDBMS comes complete with XDB's ODBC driver, allowing any ODBC-compliant front end tools to access XDB's database.

READER SERVICE NO. 161

OBJECT DBMS

ObjectStore

Object Design

(617) 270-9797

Fax: (617) 229-2451

Current release number: 2.1

Primary user: applications developers

Operating system(s): Windows, Solaris for Intel, Solaris for SPARC, OS/2, ULTRIX, HP/UX, IBM/AIX, NCR System V.4, NetWare 4.0, NetWare 3.11

Minimum configuration requirements: 4MB for Windows, 8MB for Unix

Object-oriented languages supported: C++

Other languages supported: C

Works in client/server configuration? yes

Price range and licensing: \$1,500 to \$11,000

Description: ObjectStore is an object-oriented for storing complex data structures and non-record-oriented information. It is suited for a wide range of complex applications, including CAD, CASE, publishing, multimedia, office automation, medical imaging, document management, GIS, simulation, and modeling. It features distribution and transaction management for concurrent access to objects among members of a workgroup, as well as state-of-the-art database functions such as data integrity, version control, and query processing.

READER SERVICE NO. 162

Ontos DB

Ontos

(617) 272-7110

Fax: (617) 272-8101

Current release number: 2.2

Primary user: applications developer

Operating system(s): Unix, OS/2

Minimum configuration requirements: 8MB minimum on the client side (16MB recommended); 16MB on the server side

Object-oriented languages supported: C++, Centerline ObjectCenter

Other languages supported: none

Works in client/server configuration? yes

Price range and licensing: \$10,000 to \$150,000, depending on configuration, tools, and number of simultaneous users

Description: Ontos DB, a full-featured distributed object DBMS, is part of a family products that include Ontos R.O.A.D. tools, a suite of applications-development tools. Ontos DB's open, extensible architecture is designed to provide flexibility to address performance-sensitive, complex modeling applications such as multimedia, network management, telecommunications, engineering design, manufacturing, CASE, computer-aided publishing, geographic information systems, imaging, and financial modeling.

READER SERVICE NO. 163

POET

POET Software Co.

(800) 950-8845; (408) 970-4640

Fax: (408) 970-4630

Current release number: 2.0

Primary user: applications developer

Operating system(s): DOS, Mac, OS/2, UNIX, NextStep

Minimum configuration requirements: 2MB RAM, 5MB disk space

Object-oriented languages supported: C++

Other languages supported: none

Works in client/server configuration? yes

Price range and licensing: \$600 to \$10,800; single user and client/server editions available

Description: Poet's scalable servers support heterogeneously networked platforms. Built-in portability lets you leverage the C++ programming investment across every major compiler. Poet supports inheritance, polymorphism, and complex objects with pointer references and container classes. The client/server architecture uses event handling to keep clients' shared objects concurrent. Poet features also include variable length strings and BLOBs, simple and nested transactions, flexible object locking, optimized parallel queries, and referential integrity.

READER SERVICE NO. 164

Versant ODBMS

Versant Object Technology

(800) 837-7268; (415) 329-7500

Fax: (415) 325-2380

Current release number: 2.1

Primary user: end user, applications developer, database administrator, systems analyst

Operating system(s): Sun OS, X Windows, IBM, AIX, HP/UX, ULTRIX, Dynix, IRIS, Nextstep, OS/2
Minimum configuration requirements: 12MB of memory

Object-oriented languages supported: C++, Smalltalk

Other languages supported: C, SQL

Works in client/server configuration? yes

Price range and licensing: Prices start at \$6,000

Description: Versant ODBMS, designed for developing applications in multiuser, distributed environments, offers a complete product line, including database administration and applications-development tools, multiple programming language interfaces, and a family of customer support services. Versant products reduce the time and cost of creating complex applications, and enable the development of next-generation applications that are difficult or impossible to build using traditional database management technologies.

READER SERVICE NO. 165

INTEGRATED CASE

InfoSpan CASE Integrator

Infospan Corp.

(612) 939-0088

Fax: (612) 939-0380

Current release number: 3.0

Primary user: end user, applications developer, database administrator, data administrator, repository administrator

Operating system(s): OS/2, DOS, SunOS, Windows NT, any Unix-based system

DBMSs the product works with: Oracle, SQL Server, DB2

CASE products supported: ADW/IEW, Bachman tools, IEF, Excelerator, Oracle CASE, System Engineer (LBMS)

Price range and licensing: contact vendor

Description: InfoSpan's CASE Integrator allows a company to integrate their best of breed CASE design tools to create a homogenous-like development environment. The CASE Integrator is an open solution that extracts design objects from a variety of tools and manages them inside the repository. The CASE Integrator addresses

Buyer's Guide

addresses the following challenges: a) design version and release management, b) resolution of inconsistent designs, c) transformation of design objects from one tool's vocabulary to another, and d) exchange designs between a variety of CASE tools. The CASE Integrator works with the InfoSpan Open Repository to store the design objects in a graphical information model in the repository. This allows you to view, analyze, query, and standardize names as well as integrate and exchange the design information across tools, users, and projects.

READER SERVICE NO. 166

Application Development Workbench (ADW)

KnowledgeWare

(800) 338-4130; (404) 231-8575

Fax: (404) 364-0883

Current release number: 2.7

Primary user: applications developer, systems analyst

Operating system(s): OS/2

DBMSs the product works with: Oracle, Sybase, DB2, IMS, IDMS, VSAM, SAA SQL-compliant databases

Other products in this category supported: "Import/Export" feature works with more than 70 products/services

Maximum number of users: single- and multiuser versions

Works in client/server configuration? yes

Price range and licensing: contact vendor

Description: Application Development Workbench (ADW) is an integrated solution for client/server, midrange, and mainframe environments. ADW consists of integrated workstation products, which can be used independently or with other ADW workstations, to assist in planning, analysis, prototyping, design, code generation, system documentation, and maintenance. Work flows smoothly and efficiently from strategic planning through detailed design and system construction. All information collected during the life cycle is stored in a central encyclopedia.

READER SERVICE NO. 167

Information Engineering Facility (IEF)

Texas Instruments

(800) 336-5236; (214) 575-5900

Fax: (214) 995-4360

Current release number: 5.2

Primary user: database administrator, applications developer

Operating system(s): MVS, DOS, OS/2

DBMSs the product works with: N/A

Other products in this category supported: N/A

Maximum number of users: single user or team use

Works in client/server configuration? N/A

Price range and licensing: contact vendor

Description: IEF helps automate the strategic planning, analysis, design, code, and database generation phases of the systems-development life cycle. The tool set includes components for planning, analysis, design, and construction, and works with a central encyclopedia. Workstation copies use a local encyclopedia, which uses the same meta-model as the host version.

READER SERVICE NO. 168

Integrated Systems Engineering Toolset (ISET)

LBMS Inc.

(713) 623-0414

Fax: (713) 623-4161

Primary user: database administrator, applications developer, systems analyst

Operating system(s): Windows, OS/2, DOS

DBMSs the product works with: N/A

Other products in this category supported: N/A

Maximum number of users: single user

Works in client/server configuration? N/A

Price range and licensing: contact vendor

Description: LBMS's ISET is an integrated CASE package consisting of several tools, including Systems Engineer, for design and analysis; LBMS Workplace, for tool integration and project management; LBMS Applications Engineer, a 3GL code generator; and LBMS Information Manager, a repository.

READER SERVICE NO. 169

Oracle CASE

Oracle Corp.

(415) 506-4806

Fax: (415) 506-7132

Current release number: each tool has a different version number

Primary user: database administrator, applications developer, systems analyst

Operating system(s): DOS (PC and mainframe), MVS, VM, VMS, Unix, TSO, CMS, OS/2

DBMSs the product works with: Oracle

Other products in this category supported: N/A

Maximum number of users: depends on component

Works in client/server configuration? yes

Price range and licensing: contact vendor

Description: Oracle CASE is a suite of products built on a consistent architecture described in Oracle's CASE-Method component. Using the full complement of tools—which includes CASE-Dictionary, CASE-Designer, and CASE-Generator for SQL-Forms—data professionals can produce integrated, cohesive enterprise, and database designs.

READER SERVICE NO. 170

System Architect

Popkin Software and Systems

(800) 732-5227; (212) 571-3434

Fax: (212) 571-3436

Current release number: 3.0

Primary user: applications developer, database administrator, systems analyst

Operating system(s): Windows, Windows NT, OS/2

DBMSs the product works with: DB2, Informix, Oracle, Ingres, DB2/400, Progress, xBase, Interbase, Microsoft/Sybase SQL Server

Other products in this category supported: PowerBuilder

Maximum number of users: N/A

Works in client/server configuration? yes

Price range and licensing: \$1,395 per single user, \$1,545 per multiple user; \$995 for multiuser in quantity

Description: System Architect's multiuser network version includes record-level locking and security. Supports multiple methodologies. Client/server design support includes a two-way (Powersoft) PowerBuilder Link. Supports design of data models that conform to first through third-normal form rules. Extensive rules checking and balancing facilities are provided. Graphic objects as well as dictionary records may be imported or exported from the encyclopedia. Minispec balancing, CRUD matrixes, and requirement traceability are supported, as well as user-definable metadata and custom reporting facilities. Also generates C or COBOL data structures and Windows dialogs for specified data structures.

READER SERVICE NO. 171

Buyer's Guide

Table 1: Client-server databases for OS/2.

Product Release (Company)	Additional Hardware Platforms	Additional Operating Systems	Minimum Configuration	Database Models
Advanced Pick (Pick Systems)	RS/6000, HP9000 NCR 3000, Data General, Fujitsu, Siemens, Nixdorf, ICL	DOS, Windows NT, SCO, UNIX, Pick, Citrix, 88OPEN	100kb/user	R
DB2/2 (formerly OS/2 DBM) (IBM Canada)	N/A	N/A	single user, OS/2 client, DB Server	R
FairCom SQL Server (FairCom Corp.)	UNIX	DOS, AT&T UNIX, SCO UNIX, QNX, Interactive UNIX, RS/6000, SunSPARC, HP9000, 88OPEN, Data General Aviiion	2MB	R, H, N, User Definable
Gupta SQLBase Server (Gupta)	N/A	DOS, Sun UNIX	4 MB RAM (1.x or higher)	R
Ingre Intelligent Database (The ASK Group)	UNIX	Windows NT, UNIX	8-12MB RAM, 120MB Disk	R
IMS (IBM Corp.)	IBM Compatible Mainframes	MVS/ESA	contact vendor	H
MDBS IV (Micro Data Base Systems)	RS/6000, HP9000 SunSPARC, Motorola	DOS, UNIX, AIX, Solaris, Windows NT	500K RAM, 2MB Disk	R, H, N C++, Smalltalk, VB
Microsoft SQL Server (Microsoft Corp.)	MIPS, APX-based systems	Windows NT	16MB RAM, 25MB Disk	R
Oracle 7 (Oracle Corp.)	over 80 HW/SW combinations	OS/2, UNIX, VMS, MVS, VM and others	N/A	R
Progress (Progress Software)	M680x0, RISC, VAX, Alpha, AS/400, SunSPARC, 88000	UNIX, DOS, VMS, CTOS, OS/400	N/A	R
Sybase SQL Server (Sybase)	VAX, most UNIX workstations	UNIX, VMS, SunOS, HP-UX, IBM-AIX, Stratus VOS	12MB RAM, 16MB Disk	R
Watcom SQL (Watcom)	DOS, Windows	Netware	4MB RAM	R
XDB Server (XDB)	N/A	N/A	contact vendor	R

N=Network, R=Relational, H=Hierarchical, C=C, F=Fortran, B=Cobol, S=SQL, X= Xbase, U=Unlimited

Buyer's Guide

Languages Supported	Maximum # of tables	Maximum fields/record	Maximum Field Length	Gateways Supported
S, Pick/Basic, Pro C, Access	U	U	U	any supported by UNIX
C, B, S, REXX	limited to 1 disk	255	32,700	DDCS/2
C	U	U	64K, 2-4 GB	Relix on CIS Connectivity
C, B, S	4 x 10 ⁹	254	254	EDA/SQL, MDI Gupta SQL Gateways/routers
C, F, B, S, Ada, Basic, PL/1	Unlimited	300	2GB	Ingres Gateways
C, B, REXX, PL/1, Pascal, Assembler	U	255	N/A	contact vendor
C, F, B, S, Pascal,	255	255	16,834	none
C, B, S, X	U	255	2GB	DB2, SQL/DS, AS/400, Sybase, Oracle, nonrelational DB
C, F, S, B	U	254	2GB	contact vendor
C, S, Progressive	U	32K	U	Oracle, Sybase, Rdb, AS/400, CT-ISAM, C-ISAM
S	65,536	255	255	Sybase
C, SQL, REXX	32,767	999	2GB	ODBC Level 2
C, B, S	U	750	4,056 index, 32,767 rec.	XDB-Link

Buyer's Guide

4GLs & DEVELOPMENT TOOL SETS

Applications Manager (AM)

Intelligent Environments

(508) 640-1080

Fax: (508) 640-1090

Current release number: 4.1

Primary user: applications developer

Operating system(s): OS/2, Windows NT

DBMSs the product works with: DB2 Family, Oracle, SQL Server

Works in a client/server environment? yes

Price range and licensing: \$8,400 per user (includes one year of support and upgrades); site licensing available

Description: AM is designed for development teams of all sizes to deploy workstation-based client/server applications that access data on LANs and remote systems. AM exploits operating systems capabilities, such as 32-bit addressing, multitasking, and multithreading, as well as its own object-management facilities. The product offers a visual programming environment that requires no syntax or language. Prototypes are run immediately through a built-in execution facility.

READER SERVICE NO. 172

ASK Windows4GL

The ASK Group

(800) 446-4737; (510) 769-1400

Fax: (510) 748-2514

Current release number: 3.0

Primary user: applications developer

Operating system(s): OS/2, OSF/Motif, Windows, DOS, Windows NT, Macintosh, LAN Server, UNIX, SunOS

DBMSs the product works with: Ingres, DB2, Rdb, IMS, VSAM, RMS, HP Allbase, Oracle, Sybase

Works in a client/server environment? yes

Price range and licensing: \$1,000 (one user) to \$384,000 (unlimited users)

Description: ASK Windows4GL provides tools for developing graphical, client/server applications. Not merely a GUI or an object-oriented 4GL, the product is an integrated combination of the two, with additional features to support development teams creating production applications.

READER SERVICE NO. 173

ART-Enterprise

Inference Corp.

(800) 322-9923; (310) 322-0200

Fax: (310) 322-3242

Current release number: 1.0

Primary user: applications developer

Operating system(s): DOS, Windows NT, OS/2, Macintosh, Unix, MVS (TSO, IMS, CICS), Unix (Motif, X/Windows)

DBMSs the product works with: Oracle, Sybase, Ingres, Informix, dBASE, Paradox, DB2, IMS, DL/I, VSAM

Works in a client/server environment? yes

Price range and licensing: \$6,995 to \$150,000

Description: ART-Enterprise is an integrated, object-oriented, event-driven, client/server development tool. It employs standard APIs and is portable across all major platforms. The product integrates automatically with more than 10 DBMS products, includes a comprehensive GUI class library, and simplifies development with point-and-click generators. It supports sophisticated applications that integrate object-oriented programming with rules and procedures to provide online analysis.

READER SERVICE NO. 174

CA-Easytrieve Plus, Server

Computer Associates Int'l

(800) 225-5224; (516) 225-5224

Fax: (516) 342-5734

Current release number: Plus 6.1, Server 1.0

Primary user: end user, applications developer

Operating system(s): MVS, VSE, VM/VMS, DOS, OS/2, Windows

DBMSs the product works with: CA-Datcom, CA-IDMS, DB2, IMS, Supra, Oracle, VSAM (any file structure)

Works in a client/server environment? yes

Price range and licensing: contact vendor

Description: CA-Easytrieve Plus is a generalized information retrieval and data management tool designed to simplify programming on both mainframes and PCs. Its English-like programming language and declarative statements enable the novice user to produce comprehensive reports, while its extended facilities provide the experienced data processor with the capabilities to perform programming tasks. CA-Easytrieve/Server facilitates the transfer of requests and data between the

mainframe and the PC from within the Windows environment.

READER SERVICE NO. 175

Easel Workbench

Easel Corp.

(800) 625-3287; (617) 221-3000

Fax: (617) 221-6899

Current release number: 3.0

Primary user: applications developer

Operating system(s): OS/2 (generates applications for Windows, OS/2, and DOS)

DBMSs the product works with: most DBMSs

Works in a client/server environment? yes

Price range and licensing: contact vendor

Description: Easel Workbench is an integrated development environment for rapidly delivering a spectrum of applications that work in all types of client/server architectures. The product supports a variety of database servers and communications protocols. DB/Assist, integrated with Easel Workbench, is a visual tool for creating the SQL access portion of an application. Developers can create and edit SQL statements visually, and then execute and view the results.

READER SERVICE NO. 176

Focus

Information Builders

(800) 969-4636; (212) 736-4433

Fax: (212) 967-6406

Current release number: 6.8

Primary user: end user, applications developer

Operating system(s): MVS, VM, DOS, VMS, Alpha, Tandem, HP, Unix, OS/2

DBMSs the product works with: nearly 50 DBMSs through Focus data import/export facilities

Works in a client/server environment? yes

Price range and licensing: From \$798 for a single copy of PC/Focus to \$194,000 for a large-scale VAX/VMS system; monthly licensing available

Description: Focus is a comprehensive, user-oriented 4GL/DBMS with decision-support tools and report-writer capabilities that support both relational and hierarchical structures. Focus allows multithreaded, concurrent access, cross-platform portability, and universal access to data. The Focus product line is available for client/server environments.

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- ☐ 14. General Management/Administration
- ☐ 15. Accounting/Finance
- ☐ 16. Engineering
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- ☐ 18. Marketing/Sales
- ☐ 19. Purchasing
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D. Please indicate number of employees in entire company.

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- ☐ 15. Accounting/Finance
- ☐ 16. Engineering
- ☐ 17. Medical/Legal
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Buyer's Guide

Gupta SQLWindows

Gupta
(800) 876-3267; (415) 321-9500
Fax: (415) 321-5471

Current release number: 4.1

Primary user: applications developer

Operating system(s): Windows NT, OS/2

DBMSs the product works with: SQLBase, Oracle, Microsoft/Sybase SQL Server, DB2 Family, Ingres, Informix, HP Allbase/SQL, TurboImage, Supra

Works in a client/server environment? yes

Price range and licensing: \$2,295 for standard edition, \$3,795 for corporate edition (includes TeamWindows and Quest)

Description: Gupta SQLWindows is a graphical applications-development system for building enterprise-wide client/server systems. Features include complete "learn-as-you-go" object orientation, point-and-click programming, and TeamWindows, a dictionary-driven, multiuser repository that lets programming teams collaborate. SQLWindows includes a single-user SQLBase engine for DOS and Windows allowing for stand-alone applications development.

READER SERVICE NO. 178

Guru

Micro Data Base Systems Inc. (mdbs)
(800) 445-6327; (317) 447-1122
Fax: (317) 448-6428

Current release number: 3.1

Primary user: applications developer

Operating system(s): DOS, DOS LANs, OS/2, VMS, Sun, Unix

DBMSs the product works with: Sybase, MDBS IV

Works in a client/server environment? yes

Price range and licensing: \$7,000 to \$15,000

Description: Guru is an expert system/4GL programming environment that offers a variety of information processing tools, all integrated into one program. Features such as an RDBMS, interface engine, business graphics, text processing, report generation, communications, a natural language interface, and more can be accessed at any time from within Guru.

READER SERVICE NO. 179

JAM

JYACC
(800) 458-3313; (212) 267-7722
Fax: (212) 608-6753

Current release number: JAM 5

Primary user: applications developer, database administrator, systems analyst

Operating system(s): Unix, DOS, Windows, OS/2, HP, VMS, Ultrix, SCO Unix

DBMSs the product works with: Allbase/SQL, DB2, DB2/2, Informix, Ingres, Interbase, NetWare SQL, NonStop SQL, Oracle, Progress, Rdb, SQLBase, SQL 2000, Sybase/Microsoft SQL Server, Teradata

Works in a client/server environment? yes

Price range and licensing: \$595 to \$30,000; no run times; CPU license available

Description: JAM is a distributed application tool set offering rapid, royalty-free development of portable, scalable, and interoperable applications. JAM runs on more than 100 hardware platforms, 10 operating systems, and multiple presentation environments, including Windows, Motif, Open Look, and character mode. It supports each DBMS's extended features, such as stored procedures, triggers, remote procedure calls, BLOBs, and event alerters.

READER SERVICE NO. 180

KnowledgeMan

Micro Data Base Systems Inc. (mdbs)
(800) 445-6327; (317) 447-1122
Fax: (317) 448-6428

Current release number: 3.1

Primary user: applications developer

Operating system(s): DOS, OS/2, VMS, Sun, Unix systems

DBMSs the product works with: mdbs IV, Sybase

Works in a client/server environment? yes

Price range and licensing: \$1,495 to \$2,995

Description: KnowledgeMan combines a relational DBMS and 4GL with a dynamic set of decision-support tools. The rapid development and low maintenance of object-based technology is blended with the familiarity of a procedural language within KnowledgeMan. BLOBs let users store any type of information (even sounds and images) in variable length records that can be accessed with standard SQL queries.

READER SERVICE NO. 181

Mantis

Cincom Systems Inc.
(800) 543-3010; (513) 662-2300
(513) 481-8332

Current release number: 5.2

Primary user: end user, applications developer

Operating system(s): MVS, VSE, VM/VMS, DOS, OS/2, VMS, and Unix

DBMSs the product works with: DB2, IMS, DL/1, Supra, SQL/DS, Adabas, CA-IDMS, CA-Datcom, Total, Rdb, Oracle, AIM/DB, Ingres, and DB2/2

Works in a client/server environment? yes

Price range and licensing: \$900 to \$70,000

Description: Mantis enables the complete creation of application programs in one sitting. It is a system encompassing the entire application from specifications, analysis, and design through prototyping and development of screens, files, logic, and documentation. Applications developed with Mantis can access multiple databases and file structures concurrently.

READER SERVICE NO. 182

Multiway (Acumate ES)

Kenan Technologies
(617) 225-2200
Fax: (617) 225-2220

Current release number: 1.0

Primary user: applications developer

Operating system(s): Windows NT, OS/2, VMS, MVS, VM, most Unix systems

DBMSs the product works with: DB2, Informix, Ingres, Sybase/Microsoft SQL Server, Oracle, others

Works in a client/server environment? yes

Price range and licensing: \$2,000 per seat and \$25,000 per packaged system, discounts apply to volume purchases

Description: Multiway is a multidimensional database server with a corresponding multidimensional query language. Multiway provides the engine to power large scale decision support applications that draw data from back-end data sources and serve data to a variety of front-end tools and applications. Multiway also contains sophisticated analysis, modeling, and data reduction tools and a 4GL programming language used for manipulating data at a low level when needed. Multiway lets IS professionals offer end-users flexible access to corporate

Buyer's Guide

data, while enjoying a rapid development cycle and easier maintenance. Applications developed under Multiway let users manipulate, reconfigure, and dissect data "on the fly" turning corporate data into actionable information.

READER SERVICE NO. 183

Nomad

Must Software Int'l
(800) 441-6878; (203) 845-5000
Fax: (203) 845-5252

Current release number: 6.0 (mainframe); 3.4 (PC, VAX, Unix)

Primary user: end user, applications developer

Operating system(s): MVS, VM, MSP/EX, DOS, OS/2, Open VMS, Alpha, Sun, HP, AIX

DBMSs the product works with: Nomad, DB2, SQL/DS, IMS, CA-IDMS, Teradata, ISAM, VSAM, QSAM files, Microsoft/Sybase SQL Server, SQLBase, Oracle, Rdb, DEC RMS

Works in a client/server environment? yes

Price range and licensing: mainframe \$32,000 to \$266,000, one-time license fee based on machine groups, annual maintenance fee thereafter; VAX and Unix prices user-based by platform, ranging from \$2,500 to \$120,000; PC \$795, \$595 multiuser workstation

Description: Nomad is a relational 4GL/DBMS for applications development and end-user computing. The product's single graphical environment incorporates reporting, data definition and maintenance, financial modeling and statistical analysis, and full nonprocedural and procedural language capabilities. Nomad supports static SQL access to DB2 and provides full-featured interfaces to several other databases. A remote shared database facility allows read/write, cross-mainframe data access. Must also offers Nomad Reporter for DB2, a report writer for use with 3GLs and 4GLs. It features a range of mathematical and financial functions, as well as support for static and dynamic SQL access to DB2.

READER SERVICE NO. 184

Object/1

Micro Data Base Systems Inc. (mdbs)
(800) 445-6327; (317) 447-1122
Fax: (317) 448-6428

Current release number: 3.0

Primary user: applications developer

Operating system(s): Windows, OS/2

DBMSs the product works with: TBL, mdb5 IV, Microsoft/Sybase SQL Server, DB2/2

Works in a client/server environment? yes

Price range and licensing: \$3,995

Description: Object/1 is for developing applications in graphical environments. The product includes Object/1's relational database, TBL. A pure object-oriented programming language using C++ syntax forms the core of Object/1. The source code for thousands of methods is provided.

READER SERVICE NO. 185

Pacbase, Paclan, Paclan/X

CGI Systems

(914) 735-5030

Fax: (914) 735-2231

Current release number: 8.02

Primary user: applications developer

Operating system(s): MVS, OS/2, DOS/VSE, AIX, MCP, VMS, HP-UX, OS 1100, GCOS 7.8

DBMSs the product works with: DB2, DB2/400, Oracle, Informix, Tandem, VAX SQL, DMS 1100, RDMS, IDS2, Interell/RDBC, Teradata, CA-Datcom, CA-IDMS

Works in a client/server environment? yes

Price range and licensing: \$80,000 to \$300,000

Description: Pacbase and related tools Paclan and Paclan/X (for networked systems) are CASE/applications-development environments for building enterprisewide, integrated systems. All phases of the development life cycle are supported through an enterprise depository. The product can generate COBOL programs, screen maps, database descriptions, and other executables.

READER SERVICE NO. 186

Uniface 4GL

Uniface Corp.

(800) 365-3608; (510) 748-6145

Fax: (510) 748-6150

Current release number: 5.2

Primary user: applications developer

Operating system(s): DOS, Windows NT, OS/2, HP, Stratus, Solaris, Macintosh, AIX

DBMSs the product works with: Oracle, Microsoft/Sybase SQL Server, Ingres, HP

Allbase/SQL, Informix, DB2, Rdb, RMS, dBASE, Image/SQL, Interbase, DB2/6000, BASEplus, TurbolImage, C-ISAM

Works in a client/server environment? yes

Price range and licensing: \$5,000 to \$250,000, depending on CPU and configuration

Description: Uniface 4GL builds applications that are independent of DBMS, platform, CASE tool, network OS, GUI, or 3GL. It features Uniface Information Engineering and Design Facility, which is a forms-based applications-development system. It includes polyserver-extended client/server architecture, providing simultaneous access to different DBMS systems on multiple servers via multiple networks.

READER SERVICE NO. 187

Visual Programming Environment (VPE)

Science Applications Int'l Corp. (SAIC)

(800) 227-0873; (619) 546-6100

Fax: (619) 546-6529

Current release number: 2.5

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**Late-Breaking
Developments in the
World of OS/2**

Just Announced

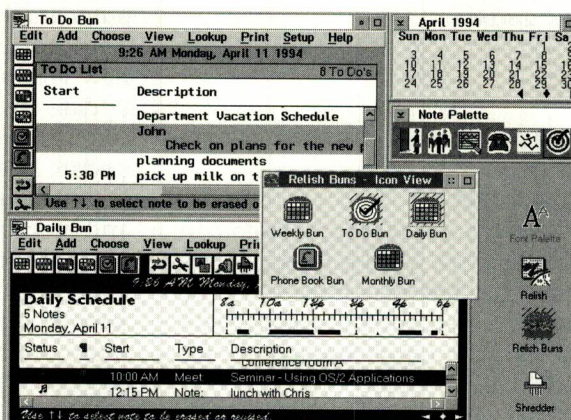
Relish 2.2

Sundial brings bun technology to the desktop

Sundial Systems is announcing the integration of OS/2's System Object Model (SOM) technology into the new release of their OS/2 personal information manager program, Relish 2.2. To be consistent with Sundial's conditions motif, the new additions are called buns. The buns represent information from the Relish Database that can be recreated and modified for specific tasks. What makes these objects special is that they are capable of containing instances of objects from inside the program, then filter out unwanted information from the task at hand. In addition, these enhancements need not be associated with a specific time, so that buns may be created for on-going projects.

Relish Version 2.2 requires OS/2 2.1 or higher, and retails for a suggested list price of \$189. Users of earlier versions should contact Sundial Systems for upgrade information. Relish Net Version 2.2 (the network version) will follow shortly and include these and other network-specific features. For more information, contact Sundial Systems Corp. at (310) 596-5121 or fax (310) 598-9851.

READER SERVICE NO. 189



This 32-bit program reads .ini files from any version of OS/2 2.0 or better, and is available for \$49.95 for single user or \$499 per corporate license. For more information, contact Carry Associates at (813) 642-5479, fax at (813) 642-1007, or CompuServe 71435,470.

READER SERVICE NO. 190

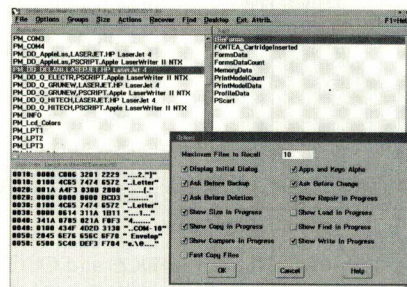
Priority Master I 1.0

Get your priorities straight

ScheduPerformance Inc. is announcing the release of Priority Master I, the flagship product of their priority-setting applications. Priority Master I can launch programs using particular priority specifications for improved performance. This Workplace Shell program can override the built-in parameters of any OS/2 program and start that program at one of 96 priority levels. Alarms can also be configured for noting when the system has or doesn't have spare CPU time.

Priority Master I is available directly from ScheduPerformance for \$39. For more information, call (305) 486-8299 or fax (305) 486-5018.

READER SERVICE NO. 191



SysMaint 3.0j

INIs, EAs, and other fun stuff

Carry Associates has released version 3.0j of their system-maintenance program, SynMaint. This utility can be used to modify and repair the binary .ini files used by OS/2 to determine the Workplace Shell configuration, and the Extended Attributes (or EAs) that store additional file information. The program includes all of the features included in Carry Associates' IniMaint program, and also

includes a safe version of the program that performs only limited functions and can't damage the .ini files.

Scriptmate 1.0

Micro-to-Mainframe automation made easy

Satori Automation Inc. is announcing the OS/2 version of their cross-platform micro-to-mainframe automation tool,

Just Announced

**Late-Breaking
Developments in the
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Scriptmate. This program works with a variety of DOS, Windows, and OS/2 3270 emulators including those from Attachmate, Data Interface, DCA, Dr. Materna, Eicon Technology, Forvus Research, IBM, NetSoft, Novell, and Wall Data. Scriptmate is able to schedule the times at which tasks are to be executed, including the option not to run on specific dates. Programming features include a scripting language and a debug mode. All scripts are stored in text format.

Scriptmate 1.0 includes the OS/2, Windows, and DOS versions in one package that is available through resellers. The single user price is \$299 and a five-user net-

work license lists for \$995. For more information, contact Satori Automation at (404) 640-0904 or fax them at (404) 518-3331.

READER SERVICE NO. 192

Ami Pro 3.0a for OS/2

Mea Culpa!

Lotus is announcing an update to their OS/2 word processor, Ami Pro 3.0a. The new release will be incorporated into the updated edition of the Lotus SmartSuite for OS/2 called version 1.0a.

Ami Pro 3.0a is primarily a maintenance release that address-

es the issues of speed and stability. However, new features have been added to the text-file filters, including a new file filter for .cgm (computer graphics metafile) files.

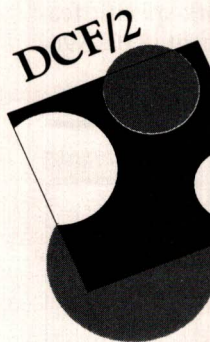
In addition to shipping the new version, Lotus is offering an update kit free of charge for registered users of Ami Pro 3.0. The update kit will amend the current installed version, keeping all data and macros intact. To receive the update kit, call (800) 872-3387 x9477. International update kits are not available at this time. For more information, contact Lotus at (404) 391-0011 or fax them at (404) 698-7660.

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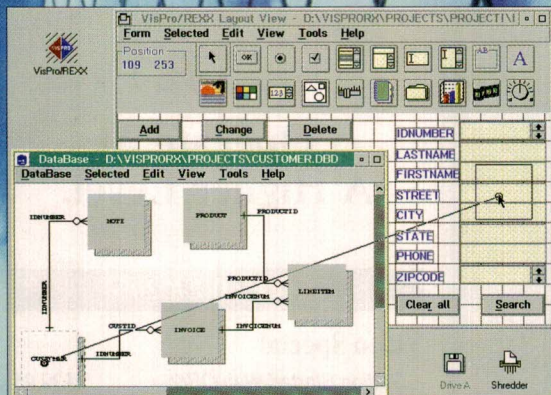
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Variables aren't Enough

THE WONDERFUL WORLD OF NUMERIC ARRAYS BY ALEX LANE



So far in this column, we've become familiar with variables that hold some value. Often, however, our programs deal with groups of values. In such cases, it's useful to be able to hold these values in an array and to be able to access elements of the array using an index. REXX allows you to do this through the use of stem variables, as illustrated in Fragment 1.

Basically, the program requests a number, then prompts for that number of data entries. The entered data is stored in variables named **stemvar.1**, **stemvar.2**, **stemvar.3**, and so on, up to the number originally entered. Here, **stemvar.** is a stem. The variables **stemvar.1**, and so on are compound variables.

The second **do** instruction asks for input of a number and returns the data stored in the **stemvar** associated with the number. (Note, by the way, that this second **do** instruction is specified to repeat forever, or an infinite number of times. Entering zero at the prompt, however, executes the **leave** instruction in the **if** statement. **Leave** causes the program to immediately exit the **do**.)

If you enter a number outside the specified range, as in the case of six in the example, REXX returns the **stemvar.6**. This is because the initial value of a stem—and of variables and compound variables having no assigned value—is the value of the characters in its symbol, translated to upper case (for example, the value of **pipe**, if unassigned, is **PIPER**).

Fragment 1:

```
/* SIMSTEM.CMD */
say 'Enter a number'
pull max
stemvar.0 = max
do i=1 to max
    say 'Enter some data ('i' of' max '):'
    pull data
    stemvar.i = data
end
do forever
    say 'Enter a number between 1 and' max ' (or 0 to exit):'
    pull number
    if number = 0 then leave
    say 'Item' number 'is' stemvar.number
end
exit
/* Output:
Enter a number
3
Enter some data (1):
25-3
Enter some data (3):
qwerty
Enter some data (4):
s.5
Enter a number between 1 and 3 (or 0 to exit):
4
Item 4 is S.5
Enter a number between 1 and 3 (or 0 to exit):
3
Item 3 is QWERTY
Enter a number between 1 and 3 (or 0 to exit):
1
Item 1 is 25-3
Enter a number between 1 and 3 (or 0 to exit):
6
Item 6 is STEMVAR.6
...
*/
```


One important characteristic of stems, is that when you assign a value to a stem, then all compound variables that use that stem are assigned that same value. To test it out, add the following line to *simstem.cmd* just after the opening comment:

```
stemvar. = 'UNASSIGNED'
```

This statement basically sets **stemvar.1**, **stemvar.2**, and any other possible compound variables that use **stemvar.** as a stem to the value 'UNASSIGNED.' The first **do** instruction lets you assign new values to *stemvar.1*, and so on. Subsequently, if you enter a number outside the specified range in the second **do** instruction, the value returned by the program is the value 'UNASSIGNED' of the stem. By the same token, if you move this line to between the **do** instructions, then

whatever number you enter will return 'UNASSIGNED.'

Compound names are not limited to just two parts, as in **stemvar.2**. You could describe a two-dimensional array with the compound name **twod.x.y**, or a three-dimensional array with the name **threed.x.y.z**. In these examples, **x**, **y**, and **z** can be numbers, or simple or constant symbols. In the latter case, before the symbol is used, the values of any simple symbols are substituted into the symbol. For example, if the values of **x**, **y**, and **z** are 3, 4 and 6, respectively, the value of **threed.x.y.z** is whatever **threed.3.4.6** may be.

This characteristic is very important, because it means that you can access elements of an array by simply changing the value of a variable that forms part of the array's compound variable name. For example, you could add the following lines to the end of *simstem.cmd* to output the values entered earlier in the program:

```
do i=1 to max
  say stemvar.i
end
```

Compound variables can also be used to create arrays that are not indexed by number, for example, **stemvar.andrew = 1** is a valid statement.

REXXing on

Here, in a handful of columns, and overlooking a lot of detail, is the basic machinery of REXX. To get a better feel for the language, including all the details I couldn't elaborate on, I encourage you to call up the *rex.x.inf* file using OS/2's VIEW utility.

Alex Lane is a Colorado-based consultant and writer, and a contributing editor to Software Development magazine and AI Expert magazine. He can be reached via CompuServe as 75715,1370, or Internet as 75715.1370@compuserve.com.

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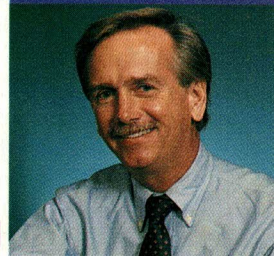
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On-line Services Provide Information and Support

COMMERCIAL ON-LINE SERVICES OFFER A WEALTH OF RESOURCES BY DICK CONKLIN



Last month, we talked about bulletin board systems (BBSs) as a good source of OS/2 information. This month, we'll look at commercial on-line systems—specifically America Online, CompuServe, Delphi, GENie, and Prodigy. All of these on-line systems offer services that are similar to volunteer-managed BBSs, and in some cases, a lot more. We'll also check out TalkLink, IBM's own bulletin-board service.

You can think of an on-line service as a very large mainframe computer that you connect to by using a modem and communications software. In some cases, an on-line service has its own special communications software; in other cases, you can use a general telecommunications package. To access one of these on-line services, you'll need to join the service. Once you're a registered customer, you can read and send messages on a wide range of subjects, and download OS/2 software and files.

Since the big on-line services have thousands of subscribers (CompuServe and Prodigy have well over a million each), and hundreds of users accessing information simultaneously, some interesting services are possible. For example, you can join a live conference (sometimes called a chat or a roundtable) and "talk" to a group of people in real time. A variation of this type of conference is the on-line class, where the instructor and students can interact classroom

**These days,
everyone is getting
on the highway, and
that means access to
the Internet.**

style. You can even leave a tough technical question on the service's OS/2 forum (bulletin board) and get a return answer from other OS/2 users in just a few hours. That's because an on-line service, with gigabytes of storage and thousands of users, can afford to offer more information and support. IBM has established a presence on many on-line services to disseminate OS/2 news and product information and provide support for users and developers.

These days, everyone is getting on the highway, and that means access to the Internet. Most services let you send and receive messages to the 20 million Internet users.

Competition among the on-line services is fierce. Trial membership kits are packaged with modems and computers. Prodigy's access software is pre-loaded on many systems. Some services let you register on-line using generic communica-

tion software (such as OS/2's SoftTerm mini-application). Most provide access software that makes their system easier to use.

When you are shopping for an on-line service, membership and usage fees are a big consideration. Charges can be based on several factors: flat, monthly or hourly rates, or fees based on which services you use. Charges also vary, depending on whether your chosen on-line service has a local telephone number in your city, or if you need to connect through a "packet-switching" relay service like Tymnet, SprintNet, or Telenet. In those cases, you'll pay an extra surcharge (but it's still less expensive than making a long-distance call to your on-line service's headquarters).

We've summarized the big services listing the OS/2 forum and library topics. For membership information, call the number shown. If you have questions about their OS/2 support, and if you have Internet e-mail access, you might choose to send a query to the service's OS/2 systems operator (or "sysop").

America Online

America Online is a relatively new on-line service. If you're already a member, you can access its OS/2 section by typing <Ctrl+K> OS/2. Internet subscribers can reach the OS/2 sysop, Audrey Peck, at pcaud@aol.com. America Online offers its own special communica-

tions software, but only DOS and Windows versions are available.

America Online's OS/2 forum contains sections for IBM and third-party press releases, questions and answers, development topics, and support for Stac Electronic's Stacker for OS/2. The forum's software library has areas dedicated to applications, bitmap and sound files, development topics, fonts, games, icons, OS/2 1.x, patches and drivers, system tools, telecommunications, and utilities.

America Online charges a monthly fee of \$9.95, which includes five hours of connect time, after that hourly connect-time charges are \$3.50 at 9,600 bps. Contact America Online at (800) 827-6364 or (703) 448-8700.

CompuServe

CompuServe is one of the oldest and largest on-line services. There are two sets of OS/2-related forums, some sponsored by IBM, and others by independent forum managers. To go to a menu of OS/2-related forums, type GO IBMOS2. The IBM forums sysop is Irv Spalten (76711.175@compuserve.com); the independent third-party vendor forums are managed by Guy Scharf (76702.557@compuserve.com). CompuServe can be accessed with generic communications software, CompuServe's own CompuServe Information Manager (for DOS, Windows, and Macintosh); or Creative Systems Programming's Golden CommPass (for OS/2).

IBM sponsors nine OS/2 forums. The OS/2 Users Forum, a home base for Team OS/2, covers new-user questions, hardware and software, information about IBM's marketing of OS/2, and OS/2 games. The OS/2 Support Forum is where you'll find answers and support files for installation problems; hardware (input/out devices, platforms, displays, printers, and other devices); the Workplace Shell; the REXX language; DOS, Windows, and OS/2 applications; and telecom-

munications. The OS/2 Developer 1 and OS/2 Developer 2 Forums contain support files for developers of OS/2 applications. The first forum contains information on APIs, C and C++, REXX and other languages, multimedia, device-driver development, and debugging. The second developer forum covers development of DB2, LAN Server, NTS/2, TCP/IP. The PSP Products Forum is where IBM supports its Personal AS/2, Person 2 Person/2, CICS OS/2, RouteXPander/2, ATP, Database Manager, LAN Server, P/370, PCCard, IBM Speech Products, LAN Distance, and PC-DOS software products. The PSP Beta Forum contains an ever-changing mix of IBM beta-test software code.

CompuServe offers three third-party OS/2 vendor forums where software, hardware, and magazine publishers maintain a customer-support presence. OS/2 Magazine's editors and writers can be found in one of those forums, called OS/2 A Vendors Forum (OS2AVEN).

CompuServe charges a monthly fee of \$8.95, plus \$9.60 per hour connect time at 9,600 bps (charges vary at different modem speeds). For more information about CompuServe, call (800) 524-3388 or (614) 529-1349.

Delphi

Delphi is one of the older, more established on-line services. It offers an OS/2 section, which can be accessed by typing "GO CUST 41." If you're not a subscriber to Delphi, you can reach its OS/2 sysop, Kari Jackson, via the Internet as karijackson@delphi.com. Delphi works with generic communications software, or you can use Delphi's DOS-only package, DLITE.

Delphi's OS/2 forum contains discussions of multimedia, telecommunications, programming, OS/2 installation, DOS and Windows applications, native OS/2 applications, the operating system wards, and OS/2 hardware. It also has a

library of downloadable software.

Delphi offers additional OS/2 support through its Windows-OS/2-GEOS-DM forum. You can also access Internet's Usenet news groups from Delphi. Usenet there are dozens of newsgroups of interest to OS/2 users, most of which are prefixed by the name *comp.os.os2*.

Delphi has two pricing plans: a \$10-a-month fee includes four hours of connect time with a \$4 charge for each additional hour; the \$20-a-month fee includes 20 hours of connect time with a \$1.80 charge for each additional hour. Delphi supports 9,600 bps, but does not guarantee connections over 2,400 bps. For more information, contact Delphi at (800) 695-4005 or (617) 491-3393.

GENie

GENie, an on-line service owned by General Electric, offers support for OS/2 users. If you're on GENie, enter "OS/2" at a command prompt for access to the OS/2 Roundtable. If you're not on GENie, you can reach its OS/2 sysops via Internet as [os2\\$@genie.geis.com](mailto:os2$@genie.geis.com). You can access GENie with regular telecommunications software, or via their DOS-only program, Aladdin.

GENie's OS/2 Roundtable contains a variety of information, covering fields such as OS/2 installation, desktop publishing, software development, hardware, user interfaces, connectivity, word processing, graphics, spreadsheets, multimedia, utilities, printing, and other applications. Downloadable files are available for most of these topics, as well as IBM fixes and patches to OS/2.

On GENie, other information about OS/2 can be found on Roundtable News, OS/2 Real-Time Conferences, OS/2 Games, OS/2 Help Desk, and Team OS/2 Meetings.

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\$16.50 during business hours, or \$9.00 after that. Other modem speeds have different hourly fees. For more information, call them at (800) 638-9636, or (301) 251-6475.

Prodigy

Prodigy, although younger than many of the other on-line services, has one of the largest subscriber bases. If you're already a member, you can find OS/2 information by typing "OS/2 Club" at a Jump prompt. If you're not on Prodigy, you can Internet e-mail its OS/2 sysop, Sherri Forman, at sherri@vnet.ibm.com. To access Prodigy, you'll need its special access software (which is preloaded on many computers); since there's no OS/2 version, you'll need the DOS or Windows versions.

Prodigy's OS/2 forums contain special information for new OS/2 users, a Team OS/2 headquarters, and help-desks for OS/2, DOS, and

Windows hardware and software. There are also support areas for video/graphics, printing, multimedia/CD-ROM, networking, programming, REXX, and beta-test feedback. The downloadable software library contains IBM and third-party device drivers, utilities, applications, and bug-fixes.

Other OS/2 support on Prodigy can be found in the OS/2 Problem Support Forum and the Question and Answer Database.

Prodigy has a variety of pricing plans that range from \$7.95 to \$29.95 a month for core features and varying amounts of special options. For specifics, contact Prodigy at (800) 776-3449 or (914) 448-8000.

TalkLink (IBM OS/2 BBS)

TalkLink is IBM's own bulletin-board. If you're already using TalkLink, you can use the OS/2 sections by selecting OS2BBS from the

main menu. If you're not already on TalkLink, you can contact the sysop, Hank Henderson, from Internet at hnderson@ibmlink.ibm.com. To use TalkLink, you should use PassPort/2 software provided by IBM's Advantix division.

TalkLink's OS/2 contains topics on OS/2 itself, communications, databases, networking, hardware, programming, third-party applications, games, and beta software. The downloadable software library contains bug fixes, ServicePaks and Corrective Service disks, tools, and other support documents.

There is a \$15 sign-up charge and an \$18 monthly fee for using TalkLink. Contact them at (800) 547-1283.

Dick Conklin is a Contributing Editor to OS/2 Magazine and Editor-in-Chief of OS/2 Developer magazine, both publications of Miller Freeman. He has been BBSing for 12 years.



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Tips & Tricks cont'd from p. 84

MULTILINE OBJECT NAMES

Q: Is there any way to make the icon titles or object names wrap to the next line instead of printing all the way across the screen like the PostScript printer icon?

A: Icon text is managed by the Workplace Shell. If you have objects with long names that you want to force to multiple lines, you can change the text and insert line feeds where you want the breaks to be.

The easiest way to update the icon text is to point to it with the mouse, then click on it with button one while holding the <Alt> key. The text will appear within a small entry field. Edit the text as you wish, putting in as many line breaks as you need by using the <Enter> key for each one. When you're done with the update, just click anywhere else on the desktop to change the focus and save the changes. Note that during the update, you will only be able to see the last line being updated, but you can scroll back and forth with the cursor keys.

LOST OS/2 WINDOW

Q: I accidentally deleted the OS/2 Window object from my Command Prompts folder. How can I get it back without having to reinstall?

A: The OS/2 Window object is just another program reference object that, when opened, starts a program. In the case of the OS/2 Window object, the program is the command interpreter. In general, if you want to create an identical instance of an object, you can bring up its context menu with button two and choose Copy. However, in this case, you have nothing to copy.

You can choose to create a new program object in several different ways. In this case, you could either

Is there any way to make the Details view the default?

bring up the context menu of any other program object and choose Create Another, or you can open the Templates folder and use mouse button two to click on and drag out a program template. In either case, you will need to fill in the details for the program object.

First, you will need to choose a name. Something like OS/2 Window would be a good one considering that is what you are recreating. If you use Create Another, you will be prompted right away. If you are using the Templates folder method, you will set the name on the General page of the settings.

For the program path and file name, you type an asterisk (*), then go to the Session page, and select OS/2 Window. If you haven't entered the name, do so on the General page, then close the settings notebook and you have recreated a new instance of the OS/2 Window. You can place this new program object in any folder.

DRIVES DEFAULTS

Q: With the Drives icon, you can open the Settings Notebook and select the Details view. Is there any way to make the Details view the default? I would like it to come up whenever I select the Drive C icon.

A: The Drives object, as you observed, is set up to default to the tree view. You can change this to default to any view you like by using the settings, for just that one session or permanently. Use mouse button two to

bring up the desired drives' context menu, then click on the arrow next to Open and choose Settings to bring up the Settings Notebook. Next, click on the menu page using mouse button one. You will see two entries for the Available Menus. Click on the Open entry. Now click on the Settings push-button next to it. This procedure will bring up a window for the menu settings.

You will notice that the entry for Conditional Cascade is highlighted. This means that on open, you will see an arrow (such as the one you clicked on to get here) for a cascading menu, but it will also have a default action. Under the Conditional Cascade, there is a field for Default Action. By clicking on the down arrow next to the current default action, you can view the list of available default actions. Click on the one you want to use as the new default (in your case, Details). Select OK and close the settings notebook. The next time you open that object, it will open in the details view. This action is inherited by all subfolders (subdirectories), unless you specifically change a subfolder's default view.

LAPTOP LAN

Q: I have a laptop machine that I usually connect to a docking station when in the office, but when traveling, I get all kinds of device driver errors when booting. My system works fine, but it is troublesome to have to acknowledge all of the error messages during boot. Is there some kind of selective configuration for my system?

A: OS/2 does not provide a selective *config.sys* file, but there is an easy solution. You will set up two files, one called *config.lan*, and the other called *config.nol* (for No LAN). Here is how you will create these files:

- First, copy your complete *config.sys* file (that contain the net-

work drivers) to *config.lan*. This will be your LAN *config.sys* file.

- Now copy the same file to *config.nol*. This will be your *config.sys* file when not connected to the LAN.
- Edit *config.nol*, and remove all of the LAN-related references, including removing all `DEVICE=` lines for LAN device drivers, as well as `PATH`, `LIBPATH` and other references to the LAN directories. Then, save the file.
- Now you will create two *.cmd* files, one called *lan.cmd* and the other called *away.cmd*. In these files, place the following lines:

lan.cmd:

```
COPY CONFIG.LAN config.sys
```

away.cmd:

```
COPY CONFIG.NOL config.sys
```

Now, before you shut down, if you are leaving the office and intend to make the next bootup away from the LAN, at an OS/2 command prompt, type `AWAY` and hit the `<Enter>` key. Then, close the OS/2 window and shut down. The next time you boot, your system will not load the LAN drivers and you will not see the messages.

If you are away, and know the next time you boot you will be back at the LAN, just before shutting down, go to an OS/2 command prompt and type `LAN` and hit the `<Enter>` key. Then close the OS/2 window and shut down. The next time you boot, the LAN drivers will load.

Of course this solution is not perfect, since you may not always know if you will be booting onto the LAN next time or not, but in many cases you do know and this solution will relieve you from seeing those messages.

Of course, you could also use the Boot Manager solution, where you

will have one partition set up for LAN and the other without LAN, but that method requires significant configuration on your part, and takes up more disk space than the *.cmd* file solution.

EXTRA DOCS

Q: I prefer to delete on-line documentation that I do not need or for which I have printed copies, but I find that I am unable to delete the desktop icons for certain objects, for example, Glossary. Why?

A: The OS/2 Workplace Shell offers a series of settings to all types of objects. One of the settings allows the object to be deleted. Many of the objects installed by OS/2 are set up so they cannot be deleted—probably to make sure you didn't accidentally delete an important object, such as the Master Help Index or the Glossary.

The easiest thing to do is to tuck these objects away in a folder you don't often use so you don't have to see them or have them take up precious screen space. If your main goal is to free up the disk space used by these on-line documents, you could go into the `\os2\help` subdirectory on the boot drive and remove the files associated with the specific ones you don't want.

If the idea of having those objects on your system at all really bothers you, several utilities will allow you to delete undeletable objects, such as the public domain programs *blackh.zip* or *blckh3.zip*. Both of these programs are available in the OS2USER libraries on CompuServe.

SPAWNED DOS SESSIONS

Q: I have some Windows programs that start DOS sessions within them. I have my `DPMI_MEMORY_LIMIT` DOS setting set to 64 megabytes, yet when

the Windows program starts the DOS program, the DOS program reports that no DPML is available. What am I doing wrong?

A: Nothing. Despite the fact that OS/2 affords Windows programs the ability to start DOS programs, the specific DOS settings the Windows session was started with are not passed on. All is not lost, however, because this function can still be accomplished.

The shell process is what passes DOS settings to the session manager when initializing a Virtual DOS Machine (VDM), or DOS session. When a Windows program calls the functions within Windows (running as Win-OS2 under OS/2) to start a DOS session, it knows nothing about the OS/2 session manager or shell, and no settings are passed, resulting in a "plain vanilla" VDM. However, Win-OS2 also has the ability to start OS/2 sessions, which is just the way to make this function work.

If the Windows program you use lets you specify the name of the program to be launched, specify the name of a *rexx.cmd* file. OS/2 has an interface to allow REXX programs to start VDMs and pass parameters or settings to the session manager to start the session with items such as DPML memory.

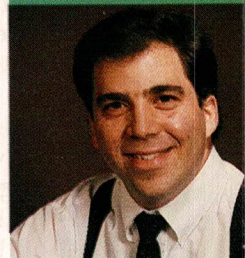
If you can't specify the name of the program to be launched, you could also try copying that program somewhere else; possibly under a different name, and name the *rexx.cmd* file the name of the program to be launched.

In summary, instead of launching the DOS executable program from your Windows program, you will launch the REXX program, which will start a new VDM with specific settings and run the desired program.

David Reich has been with the OS/2 development team since 1987. Questions can be addressed to David via CompuServe at 76711,632 and via the Internet at speedracer@vnet.ibm.com.

Software Problems with Hardware

DONGLES, MOUSE REPAIRS, DOCKING STATIONS, AND MORE BY DAVID REICH



DONGLES

Q: I have a program that came with a security device that hooks onto my parallel port. Will I be able to use this program under OS/2?

A: The device you refer to is commonly called a "dongle" and has an encoded key embedded within it. It usually sits on the parallel port between the adapter and printer cable. These devices should not interfere with the operation of OS/2. If you see any problems, you can open the settings files for the printer attached to the parallel port containing the dongle and set the checkbox to Share. Use mouse button two on the printer object to bring up the context menu, then use button one and click on the arrow next to "Open" and click on Settings. When you see the settings notebook, click on the Output tab. Now, look for the output port to which you have connected the dongle. Use the right mouse button to click on that port's icon, then click on Open. Now click on the Shared Access checkbox to check and enable shared access. Now close the settings windows and the changes will take effect.

UNMIGRATING APPLICATIONS

Q: Is it possible to unmigrate applications I have migrated using the MIGRATE tool?

I have installed OS/2 for Windows, but now my mouse does not work.

A: Migrate does not alter any files of your application programs. It simply creates OS/2 Workplace Shell program reference objects. To unmigrate, simply drag the migrate-created program reference object(s) to the shredder.

MOUSE REPAIRS

Q: I have installed OS/2 for Windows, but now my mouse does not work. How can I fix this problem?

A: Sometimes, OS/2 for Windows doesn't install the appropriate mouse device driver when updating the system. To fix this problem, simply copy the mouse device driver from the OS/2 installation diskettes to the hard disk, into the directory indicated by *config.sys*. For example, if your OS/2 *config.sys* file reads `DEVICE=D:\OS2\MOUSE.SYS`,

then copy the file *mouse.sys* from the OS/2 installation diskettes to `d:\os2`. Shutdown and reboot your system.

VMOUSE REPAIRS

Q: Sometimes, while booting my system, I get an error message saying that *vmouse.sys* is not recognized and not installed. What does this message mean and how can I fix it?

A: The error saying that *vmouse.sys* is not installed means that, for some reason, OS/2 cannot load the mouse device driver. If this system was working previously, you should check the connection from the mouse to the system unit. This message indicates that the mouse is not responding, which probably means it just isn't plugged in.

If you are performing a new mouse installation and you continue to get this message, you should check that you selected the appropriate mouse driver by opening the OS/2 System folder, then System Setup, and then Selective Install. On the Selective Install panel, check the Mouse option, then select OK. The list of supported mouse devices will be displayed. Check the appropriate one and select OK, then follow the prompts.

Tips & Tricks cont'd on p. 82

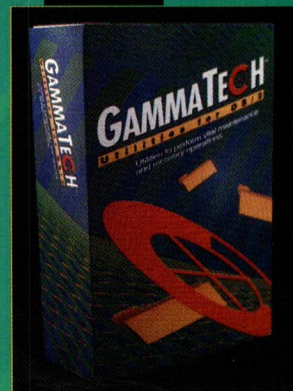
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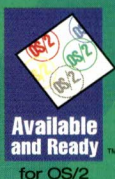
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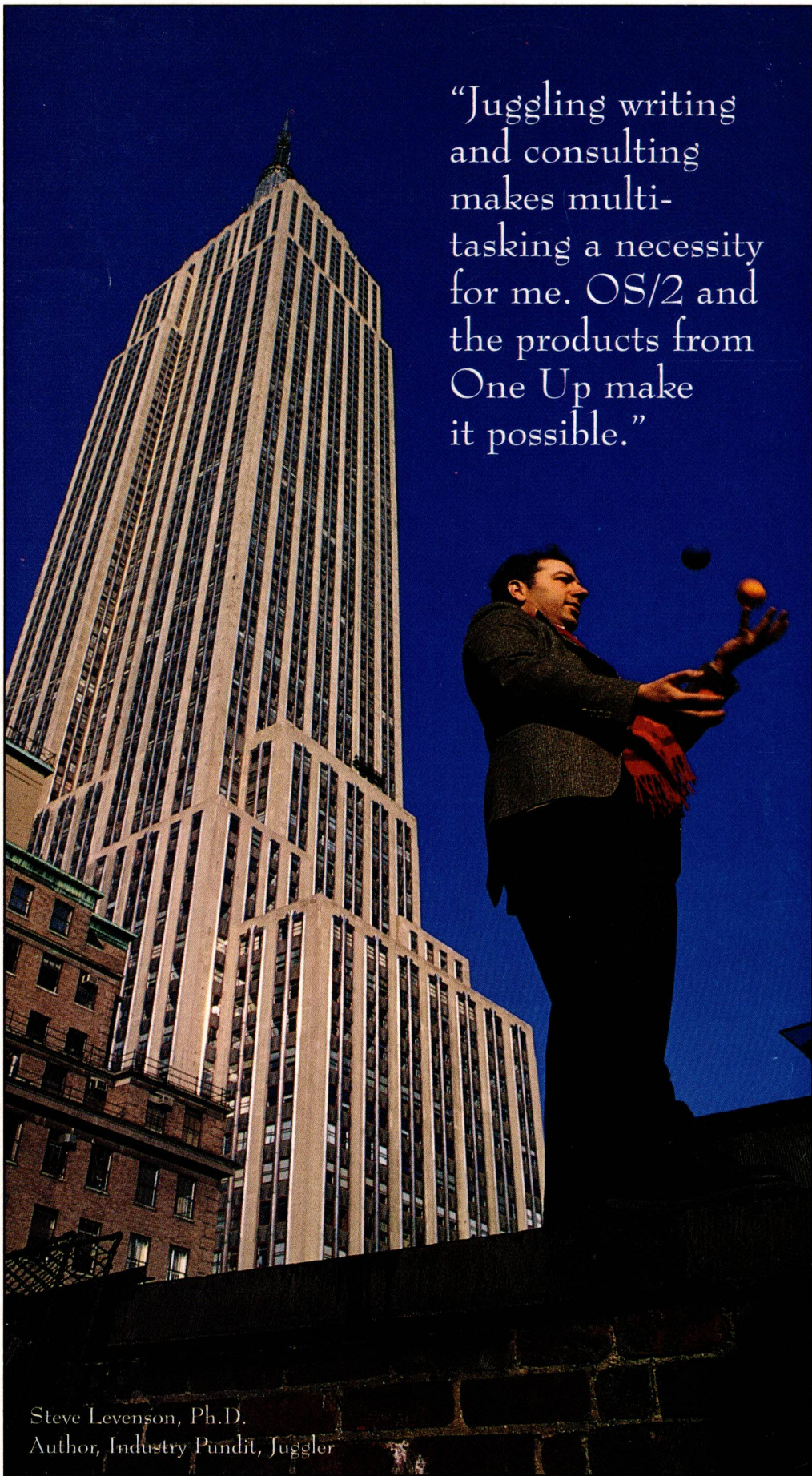
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